

Learning from and Designing for Digitally-Mediated Aspects of the Transition to Adulthood out of the Foster Care System

John Fowler

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Reading Committee:

Mark Zachry, Chair

Angelique Day

Cecilia Aragon

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John Fowler

University of Washington

Abstract

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John Fowler

Chair of the Supervisory Committee:

Mark Zachry

Human Centered Design & Engineering (HCDE)

While historically overlooked in the HCI community, the difficult transition to adulthood that many individuals experience when exiting the US child welfare system has often been the focus of traditional social work research. In recent years, several studies have indicated that there are certain digitally-mediated aspects of this transitional period that may be important to a young person's life but have largely been overlooked, including the use of internet technologies both by the people making this transition and by the researchers working to understand and support it. This dissertation centers on how research of online communities and use of interactive research tools can supplement traditional social work research and policymaking efforts related to the transition period for people with lived experience in the foster care system. There are five studies that make up this dissertation. The first is an observational study of an online community of people with lived experience in the foster care system, with findings related to the topics of discussion and how those topics compare with how the transition period is understood in traditional social work research. The second is another observational study of the online community, with a focus on how people with lived experience feel and converse about those topics. The third is also an observational study of the online community, this time how people with lived experience discuss the child welfare topics of legal, relational, and cultural permanency. These first three studies also have a focus on ethical considerations when using this type of data for research and policy implications of findings. The fourth study is an exploratory study related to understanding the data visualization needs of professionals working in the child welfare research and policy advocacy space. The final study is a user-centered design and evaluation of an interactive data visualization tool aimed to assist the work of researchers and policy advocates in this space. These five studies make important empirical, methodological, artifact, and policy contributions to the child welfare space in the HCI community, and point researchers to additional avenues of future work.

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Ch 1: Introduction

1.1 Overview

There are numerous researchers who focus on understanding and supporting the difficult transition to adulthood that some individuals experience when exiting the child welfare system in the United States. Most of this research comes out of the field of social work, where years of survey, interview, and administrative studies have outlined a set of risks and protective factors that have largely come to define the field's understanding of the transition experience (Courtney, 2009). There are several digitally-mediated aspects of the field's understanding of this transition experience that deserve the attention of researchers in human-centered design and engineering, particularly: (1) people's use of existing, ubiquitous digital tools to communicate about and help navigate their own experiences transitioning out of foster care, and (2) researchers' needs for digital tools to work with and visualize large datasets that can be used to more fully understand and support the experiences of people transitioning out of foster care.

In recent years, several studies have indicated that there are certain digitally-mediated aspects of this transitional period that may be important to a young person's life but have largely been overlooked, including the use of internet technologies like online communities and social media (Badillo-Urquiola et al., 2017; Sage & Jackson, 2021). Studying online speech and behavior can provide important insights into both the online and offline experiences of people transitioning out of the foster care system. It is particularly important to understand these experiences due to both the vulnerable position of many people with lived experience in the foster care system as well as the known privacy and addiction issues associated with algorithms used by many social media companies (Petrescu & Krishen, 2020). This combination of a population known to often have sensitive experiences and the fraught nature of many corporate online platforms means that researchers should take extra precautions when studying public online data in this space (Fiesler, 2019). In addition, online technology and social media remains a relatively unregulated space in which congress is also relatively uninformed (Milano, 2019), making communication of findings to policymakers as well as other researchers a priority. Visualization can be an important tool for this purpose, as it allows communication of detailed findings in both an efficient and engaging manner (Few, 2020), ideal for busy policymakers. Exploratory research from this dissertation shows that digitally exploring and visualizing new findings from large, publicly accessible child welfare datasets is an area of need for traditional social work researchers and policy advocates in their efforts to better understand and support people experiencing the transition out of the foster care system.

This dissertation focuses on these two digitally-mediated phenomena. In particular, it considers how research of online communities and use of interactive data visualization research tools can supplement traditional social work research and policymaking efforts related to the child welfare system. The subset of the child welfare system that is focused on is people who have spent time in the foster care system, especially during the transition to adulthood and out of the system. A set of five research questions has helped to guide the work (see Section 1.2), each of which is addressed with a supporting study. The research includes observational studies of behaviors in existing online communities and the design and evaluation of data visualization tools relevant to understanding these communities. Each of the studies makes use of data visualization techniques to communicate key findings, especially on behalf of other researchers and policymakers.

The remainder of this dissertation is laid out as follows. First, the dissertation outlines the motivating research questions and important background literature related to: (1) the transition to adulthood from foster care; (2) the role of the state in relation to child welfare online infrastructure; (3) policy and technology; (4) visualization theory and policy; (5) visualization of textual data; and (6) ethical considerations related to use of online public foster care data. Following this background information, a high-level description of the methodologies used in the four studies – especially the ethical considerations of public data use – is provided. This is followed by five chapters, each one describing a study that addresses one of the five motivating research questions. Three of these chapters discuss empirical findings related to the study of an online community of people with lived experience in the foster care system: online community research and traditional social work research (RQ1); online community research and online policy implications (RQ2); and online community research and offline policy implications (RQ3). The other two chapters discuss the user-centered design and evaluation of a data visualization tool for child welfare professional: data visualization needs of child welfare professionals (RQ4) and interactive data visualization tool in support of research and policy (RQ5). After these chapters, the dissertation concludes with a description of the overall set of contributions and some areas of future work.

1.2 Research Questions

With the above information in mind, a set of overarching research questions can help to illustrate how the research of two digitally-mediated, largely overlooked parts of the transition to adulthood from foster care led to making contributions in related areas of child welfare research and policy (see Figure 1.1). The following five research questions guided and motivated the studies that make up this dissertation:

Online Community Observational Questions:

- 1) How can research of online communities be informed by and supplement traditional social work research on the online experiences of people transitioning to adulthood out of the foster care system?
- 2) How can research of online communities inform policies related to the online experiences of people transitioning to adulthood out of the foster care system?
- 3) How can research of online communities inform policies related to the offline experiences of people transitioning to adulthood out of the foster care system?

Interactive Research Tool Design and Evaluation Questions:

- 4) How can the data visualization interests and needs of professionals in the child welfare space be supported?
- 5) How well can a user-centered designed, interactive research tool support child welfare researchers and policy advocates with their data visualization needs?

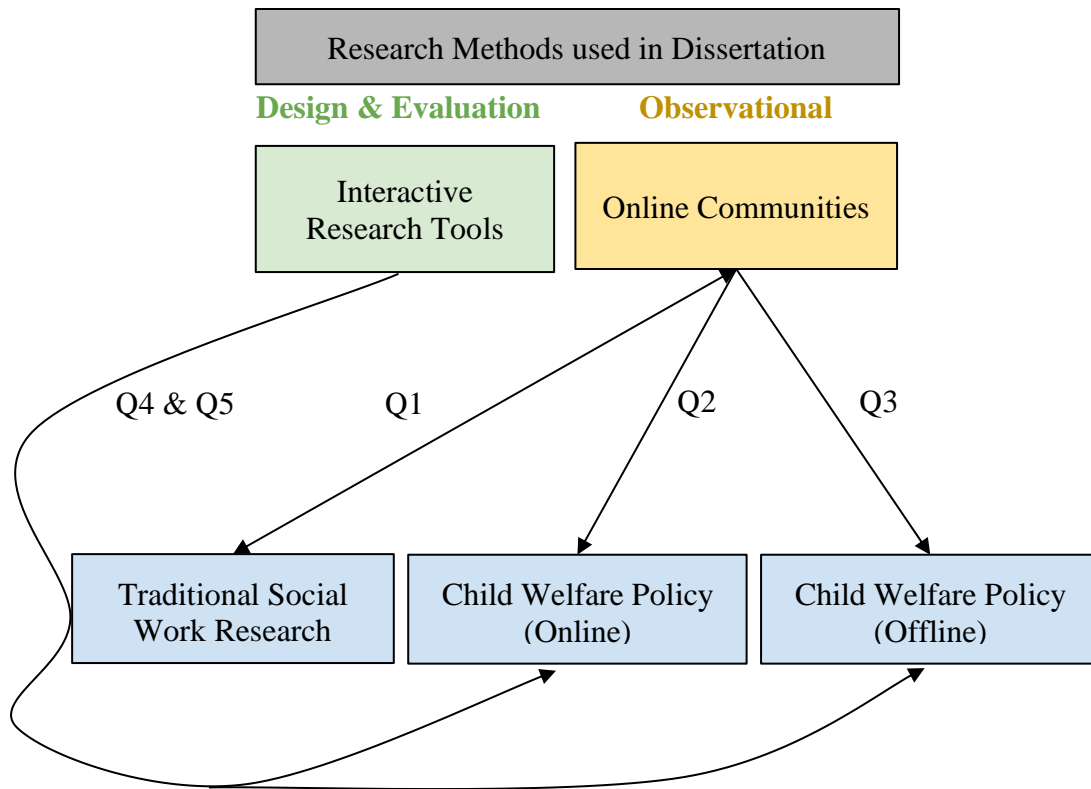


Fig. 1.1 Diagram of the intellectual contributions of this dissertation. At the top are the research methods and aspects of digital mediation that the dissertation includes. On the bottom are the areas in which the dissertation contributes to the field. Lines – with arrows indicating directionality – are used to demonstrate connections between these forms of digital mediation and areas of contribution, along with the motivating research questions that helped uncover these connections.

Ch 2: Background

2.1 Transition to adulthood from foster care

Foster care is intended as “a temporary living situation for children whose parents cannot take care of them and whose need for care has come to the attention of child welfare agency staff” (Foster Care Explained, 2021). With this temporary nature in mind, federal law requires a permanency hearing – which involves establishing a goal for how to exit foster care into a permanent family situation – for each young person who enters the formal foster care system (Child Welfare Information Gateway, 2020). Despite these intentions, there are varying degrees to which stays in foster care are short-term and permanency is achieved. National data from 2020 show that often young people do exit foster care to live with adult caretakers (e.g., 48% of youth who exited in 2020 were reunified with a parent or primary caretaker, 25% were adopted, 10% exited to live with a legal guardian, and 6% exited to live with other relatives), but young people continue to exit foster care on their own in a substantial number of cases (e.g., 9% of those who left care in 2020, or approximately 20,000 young people, did so via “emancipation” from the foster care system) (Kids Count Data Center, 2021). Frequently, the group of individuals who exit foster care without a permanent family are forced to do so upon reaching the maximum age – typically between the ages of 18 and 21 – of eligibility for foster care in their state (Child Welfare Information Gateway, 2020). There exist a variety of terms and phrases used to describe the process of young people exiting the foster care system each year without the support of adult caretakers, including “aging out of foster care,” “emancipation,” and “transitioning to adulthood.” Since these terms refer to similar phenomena, it is common to see them used interchangeably in the literature. However, when scholars define the terms more specifically it can be seen how each refers to and emphasizes different details and points of view on the process of a young person exiting the foster care system on their own. The ways that people define these terms often differ in relation to the breadth of experiences covered and the aspects of those experiences emphasized. These variations reflect historical differences in the conceptualization of how becoming an adult has been understood both in the context of the child welfare system and more generally in the United States. Central to understanding some of the historical changes and definitional inconsistencies are the different expectations of individual self-sufficiency embedded in the phrases “transitioning to adulthood” and “emerging adulthood.” The uniqueness in expectations for young people with foster care experience in contemporary times becomes particularly clear when comparing use of these terms in the child welfare context and the adolescent development literature in general.

“Aging out of foster care” can be defined as being required to exit the foster care system without achieving permanency due to reaching an age that exceeds a state’s maximum for foster care involvement. The experience of aging out is one of the more narrowly defined ways of exiting the foster care system without permanency. Barth (1986) defined aging out of foster care as the moment when children “reach the age of majority” and are accordingly “discharged from foster care” (p. 165). This definition places emphasis on a few of the differentiating factors associated with the aging out phrase. In particular, to “reach the age of majority” describes aging out as an abrupt form of exiting the system that occurs due to an arbitrary technicality (i.e., reaching the age threshold at which all people in a state become legally defined as adults). The description of a person being “discharged” also emphasizes that this is an action that happens to a young person, rather than a choice that they are making voluntarily. More recently, Berzin et al. (2014) defined aging out as “the age at which the formal relationship of the state to the child under guardianship

is ended” and they indicate that it “represents a definitive end to a child’s time in care and the end of services” (p. 618). Again, this definition describes an abrupt termination of a young person’s tenure in the foster care system, exclusively based upon the criteria of age. It also emphasizes what is lost by pointing out the “end of services” associated with exiting care. Aging out of foster care is a phrase that describes exiting foster care at the discretion of the state with expectations of an abrupt passage into adulthood and an emphasis on the loss of access to services associated with foster care system involvement.

A slightly more general term, “emancipation” can be defined as an exit from foster care toward adulthood in which a young person is released from the guardianship of the state without permanency. Some historical definitions of the term emphasized the personal “freedom and responsibility” that comes from emancipation and that the related cliff in available services “propels the adolescent toward concrete planning for independent living” (Mauzerall, 1983, p. 52). Like aging out, emancipation focuses on the move into adulthood as a something that occurs at a moment in time, with a stark paradigm shift from being a youth in foster care (with both the access to services and obligation to various adults that it entails) to being an independent adult (with both freedom from oversight and the need for self-sufficiency). Despite the conflation of emancipation and aging out in much of the literature, emancipation can conceptualize a broader range of situations than just exiting care due to reaching a specified age. Though rare, even minors can be emancipated from foster care. One situation in which minors are known to have sought emancipation are pregnant girls close to aging out who are having difficulty receiving parental consent for abortion in states where that is required (Moore, 2012). Another study of youth who lived in a state that permitted remaining in foster care until age 21 but chose to emancipate from the system before that age indicates that the choice to leave was primarily because they were “frustrated with what they perceived to be poor service” (McCoy et al., 2008, p. 743). These examples demonstrate that emancipation can be a choice (even if an unenviable one) made at the discretion of the young person and it can occur at a wider range of times in that young person’s life. More recent conceptualizations of emancipation, like those of Curry & Abrams (2015), often recognize the feelings of “intense pressure towards self-reliance immediately upon emancipation” (p. 147) while advocating for the move into adulthood to be a process in which young people “seek interdependence rather than independence, which would include the successful utilization of social supports that help to maintain stability in the years following emancipation” (p. 146). Emancipation is a term for exiting the foster care system without permanency that encompasses both required and chosen exits for the young person while emphasizing the abrupt change in structure that a young person is likely to experience as a result unless an alternative set of services and supports are made available.

“Transitioning to adulthood” in the child welfare context is a more widely encompassing phrase that describes the process of a young person moving from adolescence to adulthood. While the transition may include exiting from foster care, it is a process that is relevant to youth who have already achieved permanency as well as those who have not. Particularly for those young people who have not achieved permanency, less recent conceptualizations of the transition to adulthood emphasized the need for a “continuum of independent-living services” to be incorporated into permanency planning in recognition of the state’s “responsibility for facilitating transitions out of the system as well as care while in the system” (Courtney & Barth, 1996, p. 82). Like older conceptualizations of emancipation, this understanding of the transition to adulthood has

independence as its goal. However, it also recognizes this move toward independence as a process, albeit one that is closely bound to the period of time directly surrounding the young person's exit from the system. More recent literature using the phrase transition to adulthood also emphasizes this period directly surrounding exit from the foster care system, but often replaces discussion of independence with descriptions of "the importance of relational networks and social support during the transition" (Singer et al., 2013, p. 2111). The Children's Bureau recognizes this shift in focus as well:

"Today, many child welfare professionals are talking about *interdependence* rather than *independence*. *Interdependence* promotes the idea that young adults benefit from developing and maintaining supportive relationships that will help them achieve their goals rather than only relying on themselves to achieve them" (Child Welfare Information Gateway, 2018, p. 6).

While recognizing that "most youth will benefit from more time to prepare", the Child Welfare Information Gateway (2018) describes how legislation from the Fostering Connections to Success and Increasing Adoptions Act has codified the transition as "the 90-day period before a youth turns 18 or is scheduled to leave foster care" during which the state works with the young person to develop a transition plan (p. 4). This definition puts the transition to adulthood in procedural terms, depicting it as a series of decisions and arrangements that are important for a person to consider in the move from the developmental stage of adolescence to the developmental stage of adulthood. In the context of child welfare, current use of the phrase transition to adulthood emphasizes a process of developing an interdependent living arrangement to support a young person's move from system involvement into adulthood.

More than merely a bridge from adolescence to adulthood, the theory of "emerging adulthood" describes the late-teens through mid-twenties for certain individuals in industrialized societies as a unique developmental stage in which choices about long-term roles related to relationships and employment can be formed more gradually (Arnett, 2007). Arnett (2007) describes the period as "perhaps the most heterogeneous period of the life course" and one that might be characterized by some combination of identity exploration, instability, self-focus, feeling in-between, and optimism (p. 69). Essentially, emerging adulthood is a time that affords a person space for trying out new experiences and self-reflection. During this time, people are able to more gradually select the pathways that will form the trajectory of their adult experience. Arnett (2007) notes that "for most, well-being improves during the course of emerging adulthood" (p. 70), but, importantly, "emerging adults may also struggle if they are part of especially vulnerable populations, such as those aging out of foster care" as they may "find themselves lost and may begin to experience serious mental health problems" (p. 71). Many people who spent time in foster care may also not have the opportunity to experience emerging adulthood, as younger parenting (Svoboda et al., 2012), lack of financial support to pursue or finish higher education (Day et al., 2011), and immediate needs like housing (Dworsky et al., 2013) can accelerate the making of decisions that move a person into adulthood. In one study, Courtney et al. (2012) found that only 21% of transition-aged foster youth experienced markers of emerging adulthood. As a consequence, emerging adulthood in the child welfare context is often related to recognizing "the need for a more gradual transition" based on "models that support interdependence and more gradual emergence from the foster care system into adulthood" (Berzin et al., 2014, p. 619). The phrase emerging adulthood is sometimes employed as more of an aspirational model than a descriptor of the current state for young people with foster care experience, and researchers might use it as a

theory to guide policy and program construction in order to provide foster youth with similar experiences to their peers. In studies that focus on foster youth who do experience characteristics of emerging adulthood, the ways that it manifests in their lives are often “affected by their unique foster care experience” as “foster youth are left with a choice of help from the system, which they view as treating them like children, or adulthood that is free from support” (Berzin et al., 2014, pp. 630-631). The typical strategy for facilitating experiences of emerging adulthood among foster youth – especially those who have not achieved permanency – is to extend foster care, which eventually still ends in an abrupt manner. Unlike their peers without foster care involvement, these young people are not afforded the opportunity to alternate between receiving and not receiving support from the state as a caregiver. Once support is ended, people with lived experience in foster care are officially on their own, making the transition between emerging adulthood and adulthood starker and more definite.

The variety of terms and phrases – aging out, emancipation, transitioning to adulthood, and emerging adulthood – associated with moving from adolescence in the foster care system to being considered an adult outside of system-involvement reflect the range of conceptualizations related to this often-turbulent time. Historical definitions frequently emphasized personal responsibility, independence, and the abruptness of ending system-involvement. More recent conceptualizations often stress personal growth, interdependence, and longer periods of time related to making the shift. In contemporary understandings of these terms, many of the differences relate to whether the focus is on a recognition of the realities imposed by the system and its frequently-binary form of support or the goals of policies and programs that aim to provide a more gradual and networked offramp from system involvement into adulthood. Regardless of the term or phrase used, conceptualizations of moving into adulthood are more abrupt and definitive for people with lived experience in foster care who are unable to achieve permanency in relation to their peers. This implies the need for careful and unique considerations of foster youth exits from the system and entrances into adulthood if researchers intend to adequately address the needs of this population.

2.2 Role of the state in relation to child welfare online infrastructure

The phrase “state as corporate parent” refers to the role of the government to support and nurture any child in its custody by means of identifying and supporting individual adults who can provide proper care for that child. The phrase originated in the United Kingdom from a report by the 1980 Working Party, which was established by the National Children’s Bureau and “paid particular attention to issues surrounding the needs and experiences of children in the care of the state” (Bullock et al., 2006, p. 1). At the time, the UK delegated the responsibility of caring for some children to non-governmental organizations so the term “corporate” was included in the phrase to describe a set of public and private agencies and organizations that shared in the parenting responsibilities for some children (Bullock et al., 2006). In the time since, understandings related to the wide network of individuals and groups required to adequately look after a child and nurture their development have expanded to reflect a shared sense of societal responsibility in parenting a child in the care of the state (Laming, 2003). Bullock et al. (2006) point out that “the ‘state’ as an impersonal entity clearly cannot provide the day-to-day care that would normally be taken to constitute ‘parenting’” (p. 10) and that “many of the essential parental responsibilities which corporate bodies assume can only be exercised by individual people working with the child concerned” (p. 8). Courtney (2009) describes a similar understanding of the state as corporate parent being a networked group of supportive adults:

“As the corporate parent of children in out-of-home care, the public child welfare agency has a legal and moral duty to provide the kind of support that any good parent would provide for their own children. Of course, while governments cannot actually parent, when they assume custody of children they assume responsibility for finding and supporting adults who can carry out the parenting role” (p. 4).

Along with this increase in specificity of exactly *who* is described in the role of state as a corporate parent, conceptualizations of exactly *what* that parenting entails and should provide for a child have developed in tandem. To start, Bullock et al. (2006) describe the minimum standard of “parenting” required by the state in that there exist certain cases where the state must “assume responsibility for ensuring parenting whether it wishes to or not, otherwise children might die or roam the streets” (p. 10). At the very least, the parental role of the state is to ensure the basic necessities of survival for any child in need. While necessary, this is not close to sufficient. Other basic aspects of parenting as emphasized by the 1980 Working Party included providing a child with “affection, comfort, nurture, the provision of role models, exerting control, stimulation, protection and meeting the child's need to be needed” (Bullock et al., 2006, p. 4). Many of these needs are closely related to the concept of attachment in relationships, which requires a lasting and secure connection, without which these forms of social support are typically received much less effectively by a person (Ditzen et al., 2008). The ephemeral and mechanical nature of state support makes the state a frequently ineffective parent in this regard. In recent years, this has been recognized as the state has made the notion of permanency a priority in child welfare, with the main role of the state in many cases becoming facilitation of long-lasting relationships with supportive adults who might be able to better meet a child’s needs. Bullock et al. (2006) recognize this shift in the United States and its implications for the role of the state as corporate parent:

“The concept of the state as parent was already being replaced by the notion of permanency as an overarching perspective. This had implications for expectations about the parenting role of the state, since this was expected to diminish as children in care were either returned home quickly or adopted. It was therefore sufficient for the state to orchestrate these ambitions without too much concern for the wider parenting tasks intrinsic in long-term relationships with separated children” (p. 7).

Even more recently, this understanding has developed further, as the state has increasingly recognized the importance of multiple types of permanency, including legal, relational, and cultural. Legal permanency – relating to “the legal arrangements of a child’s custody and guardianship” (Osmond & Tilbury, 2012, p. 100) – was the first of these to be widely recognized as important to the welfare of children. Relational permanency – describing the “opportunity to experience positive, caring and stable relationships with significant others” (Osmond & Tilbury, 2012, p. 100) – has also gained wider acceptance as an area of importance with the previously discussed shift toward emphasizing interdependence. Cultural permanency – encompassing “practices of customary care” that allow children to “develop or maintain permanent connections with their families, communities, and culture” (Bennett, 2015, p. 101) – has received more pushback in its integration into state parenting frameworks but is still widely recognized as important in some circles. Working to provide children with a network of lasting relationships that can provide these three forms of permanency has become a core part of the state’s role as corporate parent.

There exist many interpretations of the more general role of the state in monitoring citizens and developing infrastructure for their use. Turning to postcolonial and antiracist scholars is one way

to guide considerations in this domain. These frameworks are particularly relevant for determining the role of the state in the U.S. child welfare context, as “the ongoing legacy of structural and institutional racism in America” has resulted in Black children being “over-surveilled and over-policed by the child welfare system” with a resulting set of disproportionately adverse outcomes (Dettlaff et al., 2020, p. 500). Similar treatment of other minoritized groups by the child welfare system has been observed among Indigenous children (Crofoot & Harris, 2012) and sexual and gender minority youth (Prince et al., 2021). Fanon (2008) viscerally describes how the scrutiny of this sort of surveillance results in a loss of autonomy over one’s own life and identity:

“In the white world the man of color encounters difficulties in the development of his bodily schema. [...] Below the corporeal schema I had sketched a historico-racial schema. The elements that I used had been provided for me not by ‘residual sensations and perceptions primarily of a tactile, vestibular, kinesthetic, and visual character,’ but by the other, the white man, who had woven me out of a thousand details, anecdotes, stories” (pp. 90-91).

Instead of surveillance, Fanon calls for the freedom to be able to define his identity and practice his culture on his own terms and at an equal footing to outside perspectives. His anticolonial thought can, perhaps, be most easily and practically observed in his work as a psychologist, in which he advocated for treatment of patients within their own family and community settings rather than in institutionalized ones. Black (2007) describes Fanon’s push for autonomy and freedom to identify in the world on his own terms:

“Liberation, in Fanon’s sense, includes assessing one’s colonized perspective through one’s indigenous perspective. He does not claim that people can or should forget the white European perspective, but he maintains that people should not be dominated by, and limited to, the outside perspective. This is the merging of strivings that DuBois also seeks” (p. 397).

In the views of Fanon and DuBois, liberation from colonialism and racism includes a recognition of multiple cultures and a genuine leveling of power so that complex modern communities can operate without domination from a single perspective. Porter (2016) describes how “domination, oppression and injustice are the products of hatred and violence” and she uses bell hooks’ contribution of love as a “relational politics” with dimensions of “service, compassion, and insight” as an orientation toward liberation in the face of that hatred and violence (pp. 157-158). What this means in terms of the role of the state is that young people, families, and communities should be viewed as partners from whose perspective the state can better understand how it can be of best service. This requires trusting people and shifting power (which requires active work) from the state to communities.

Not only does this make sense from the perspectives of many people at a community level, it also makes sense at the level of the state historically not being very good at unilaterally exerting its power to the benefit of most individuals or communities. Scott (2008) makes this point clear in his book on state planning projects and high modernism. He describes instances of state planning and social reordering that are characterized by a concentration of powerful individuals with extreme confidence in their scientific and technological “solutions” and a disregard for social context and human nature. The high modernist approach has been shown to fail (often with catastrophic consequences for citizens, especially those already at the margin) in a great many scenarios and situations. In fact, Scott (2008) asserts that “high modernism was politically polymorphous; it could appear in any political disguise, even an anarchist one” (p. 164), and instead tends to be

readily recognizable by its “unidirectional flow of intellectual, social, and cultural services from above” (p. 156). Similarly, Pfeffer (2013) describes how power imbalances hold across a variety of social structures in part due to the “persistence of hierarchy” (p. 272) and hubris from the top in believing that “everything one touches is better” (p. 274). However, a different approach from the state is possible, as can be seen by Scott’s (2008) description of city planner Jane Jacobs. Jacobs believed that communities cannot be fully planned and that her role should be more of accommodating the world than changing it. As a planner, she wanted to know what “function” something served in the city and how well it served that function (p. 133). The functions that she seemed most interested in facilitating and protecting were those that encouraged “diversity, cross-use, and complexity,” which she asserted were vital to maintaining a “rich, informal public life” where “trust” can be cultivated (p. 136). She did not believe this trust can be institutionalized, but instead comes from the community itself. On the other hand, without planners consciously making room for “unofficial plans, ideas, and opportunities to flourish,” those with outsized commercial and political influence will have too much power to shape too much of our social existence (p. 143). As she says: “Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody” (p. 142). This feminist perspective for planning a city can provide a useful analogue for consideration of the state’s role in building and developing infrastructure in general. The state can serve a meaningful role as a facilitator of participation and collaboration from people and communities to plan and develop the infrastructure that best meets their needs, regardless of whether those people and communities would have the resources to do so independently.

One form of infrastructure that has gained increasing importance in society is the internet, with social media being of particular interest. Youth in and transitioning out of foster care have been known to use social media for a variety of purposes, with certain associated benefits and risks. Fowles (2018) describes how the internet and social media are places that youth in foster care turn to regain voice, connect with society, and begin to control the stories of their lives. Despite these benefits, foster youth are less likely than their peers to be provided access to social media (Badillo-Urquiola et al., 2017), which potentially puts them at certain disadvantages compared to their peers, especially in regards to inclusion in political discourse, access to information, and the ability to form and maintain relationships (Fowles, 2018). Sage & Jackson (2021) discuss how foster youth should be provided support in order to learn how to maximize the benefits while minimizing the risks of using social digital technologies. In particular, youth discuss ways that social media supports “relational connections” in their lives, including: “(a) finding and maintaining relationships with family members; (b) making and sustaining friendships and romances; (c) supporting their offline relationships; and (d) improving relationships with formal supports” (Sage & Jackson, 2021, p. 7). Sage & Jackson (2021) also describe youth perceptions of the risks of social media use, “including (a) internet-mediated sexual exploitation and dating violence; (b) cyberbullying and harassment; (c) the difficulty of navigating complex relationships online; (d) the distraction caused by ICTs; (e) the risk of being monitored by agency staff” (p. 7). In addition, Gustavsson & MacEachron (2015) point out that foster youth often find themselves in the “unique position in which social welfare agencies or government entities manage their privacy and share information with other entities. The foster youth may have limited understanding of what information is being shared and with whom” (p. 411). However, Fitch (2012) points out that despite the known risks, the potential benefits of safe and effective social media use for foster youth mean that defaulting to restriction of use should not be the primary pathway, as they instead

recommend that local jurisdictions should work with people with lived experience in foster care to help set specific policies and guidelines on social media use appropriate for the communities in which they live.

2.3 Policy and technology

Academic research typically revolves around the publication of findings in peer-reviewed conferences and journals. In the field of Human-Computer Interaction (HCI), there even exists a useful guide on contribution types that authors might consider when producing and communicating their research findings (Wobbrock & Kientz, 2016). While the seven contribution types – including empirical, artifact, methodological, theoretical, dataset, survey, and opinion contributions – outlined by these authors are vital for nurturing and developing a community of quality research on technological innovation and practice, we might also consider what is missing. For example, translational work and implications for policymakers do not fit nicely in these categories. This is worth noticing because the Wobbrock & Kientz paper is itself largely empirical, as the authors based their categorizations on observations of the types of contributions seen in CHI conference submissions and acceptances. The implication of this is that, as a research community, we are largely undervaluing and underproducing communication of our findings as they relate to the discourse of people outside the technology sector and, in particular, the discourse of people who govern us and set policies related to our lives. This oversight (along with a variety of other factors) has resulted in technology in the United States remaining largely unregulated, as members of Congress are significantly uninformed about technology issues. In 2019, Laura Manley – the director of the Technology and Public Purpose Project at Harvard’s Belfer Center – indicated that just 15% of Congress had training in areas of technology and that staff members often turn to tech lobbyists when in need of information related to tech oversight (Milano, 2019). While concerning, the current state of research-informed tech policy is not necessarily surprising. In his book on the relationship between and policy implications of “basic science” and technological innovation, Stokes (2011) stated that “only a framework that deals *ex ante* with the goals of research can serve the needs of science and technology policy” (p. 78). In this sense, the existing empirical framework of HCI research contributions indicates that translation and policy impact have not necessarily been top priorities for technological researchers.

To remedy this, we might first consider what it means to translate research findings to others outside the HCI research community and how policy is typically impacted. An especially popular term in the field of medicine, translational research has gained a lot of attention as a means of turning research into practice and ensuring that knowledge derived from research is communicated so that it can actually be understood and used by an intended audience (Woolf, 2008). It should be noted that there has been some focus on translational research in HCI in recent years (Colusso et al., 2017), though it has typically been related to translation of research for practitioners rather than for policymakers. If we as HCI researchers would like to inform policy with our findings, we should seek to understand how policymakers prefer to receive information. Most often this is done through policy briefs (which typically range from two to eight pages in length) or one-page summaries aptly called “one-pagers” (Izumi et al., 2010). While both are relatively concise compared to peer-reviewed research articles, the highly practical one-pager tends to be the most “effective way to succinctly summarize major points and guide discussions with policy makers” (p. 2). These documents need to quickly and effectively communicate key findings and concerns to policymakers. The ability to engage and persuade a policymaker, and to do so using as little

space as possible, are therefore vital for translating technological research findings to impact policy.

2.4 Visualization Theory and Policy

If the findings of one's research are based on data, visualization is a method that can be used for efficiently communicating findings to policymakers in an engaging and persuasive manner. Few (2020) describes the complexity and messiness of data as follows: "Data consists of facts about things. Some are true, some are not. Some are useful, most are not" (p. 6). If we show what is true and useful from data, we have the potential to efficiently make better decisions based on evidence – essentially the charge of the modern-day policymaker. Many of the pioneers in the field of information and data visualization extolled the virtues of quality graphical displays for these purposes. Tukey described the clarity that can be provided by well-done visualization of complex data: "One great virtue of good graphical representation is that it can serve to display clearly and effectively a message carried by quantities whose calculation or observation is far from simple" (Few, 2020, p. 11). Tufte (2001) also pointed to high-quality visualization as often the "simplest" and "most powerful" method to "describe, explore, and summarize a set of numbers" (p. 9). Beyond clarity and efficiency, Ware pointed out a natural storytelling virtue of good visualization in that data presented according to an understanding of human perception can enhance the ability of the audience to perceive "important and informative patterns" (Few, 2020, p. 12). Hearst (2011) similarly described how adherence to specific perceptual principles like *preattentiveness* and *Gestalt principles* can be used to "organize information, highlight important information, allow for visual comparisons, and reveal patterns, trends, and outliers in the data" (p. 236). These are all analytical activities that can provide deep insight into a complex problem while tapping into natural ways that humans make sense of their visual surroundings. Cleveland pointed to the value in maximizing human perception in this way. He described the persuasiveness of quality visualization, calling it "critical to data analysis" as a means to "discover unimagined effects" and to "challenge imagined ones" (Few, 2020, p. 13). Kostelnick (2016) describes the use of color and interactivity in some visualizations as means of appealing to the audience's emotions to engage them and humanize the data. While visualizations can be highly persuasive and engaging, researchers additionally point out that well-constructed visualizations can helpfully serve to keep researchers honest by allowing the audience to judge for themselves how well they perceive the data to fit any models or trends that have been extrapolated from them (Cook et al., 2007). At a high level, it is clear that experts in the field of data visualization believe the methodology can be an effective tool for efficiently communicating powerful findings from complex problem-spaces while engaging and persuading an audience – all the key points we are looking for in communication of research findings to policymakers.

2.5 Visualization of textual data

Hearst (2011) describes the goal of visualizing data as translating "abstract information into a visual form that provides new insight about that information" (p. 234). While data generally contains abstract information, there are characteristics of the content and structure of that information that dictate the visual forms into which it is possible to be translated. For visualization purposes, data can be considered in two overarching types – quantitative and categorical – based on if arithmetic operations make sense to perform on it (Hearst, 2011). Few (2020) posits that quantitative and categorical data are "always paired: one is of little use without the other" (p. 7). Within the categorical data heading are four subtypes: interval, ordinal, hierarchical, and nominal

(Hearst, 2011). Interval, ordinal, and hierarchical data can all be ordered or arranged into groups based on inherent properties of the data itself. For example, February comes after January (interval); a large cup of coffee is bigger than a medium one (ordinal); and children are placed at a level of a family tree directly below their parents (hierarchical). However, for nominal data, which includes names and text, such natural ordering is not clear. Hearst (2011) points out that this lack of inherent ordering and high dimensionality make it very difficult to display text visually. Essentially, with textual data we often end up with a great deal to plot and no obvious way to lay the data out in relation to one another. Additionally, Hearst (2011) explains that reading text is a cognitively intensive task, which means that the perceptual properties that allow for well-designed visualizations of other types of data to be processed in our minds without conscious effort become less powerful. Even if the viewer's eyes are drawn naturally to a desired piece of textual data, conscious cognition is still required to make sense of what the viewer is seeing. Visualizing textual data can be difficult due to lack of inherent order, high dimensionality, and competing cognitive tasks.

Hearst (2011) states that effective visualization of nominal text is an open research area. Despite the difficulties of visualizing textual data, there do exist a limited number of techniques for doing so, including the use of word clouds and network graphs. Each of these techniques has major tradeoffs. Another technique is the transformation of textual data through qualitative coding to support the use of standard visualization techniques. The idea of this strategy is to take textual data in its raw form and make categorizations about it. From these categories, descriptive statistics of basic quantities like counts and frequencies can be calculated. Essentially, this method translates textual data into the pairs of categorical and quantitative data that Few describes as necessary so that the information can be visualized using a wider range of (quantitative) visualization techniques (2020). Some of the visualizations supported by this method might include heatmaps and bar graphs that can take advantage of known properties of visual perception. The main advantage of this technique is that it allows a researcher to take a large textual dataset with no inherent structure and transform it into a useful visual based on whatever codes they choose. Coding the text makes it possible to observe trends and patterns in a rigorous way that is typically overwhelmed by contextual information when textual data is in its raw form. Without the coding process there would be no way to meaningfully pack as much detailed information about the text into the same small space. However, there are downsides to this process as well, including that the qualitative coding process can be time and labor intensive. This can cause particular problems when working with large textual datasets. An additional con is that dividing the data into categories results in some loss of context and “splits the data into disjointed elements” (Linneberg & Korsgaard, 2019, p. 21). By structuring the data for standard visual display, we must remove it from its natural sentence structure and the context of codes and variation within them. To some extent, the coding process works against the appeal of using qualitative data in research as a source of detailed information and complexity. Despite these limitations, using qualitative coding to process the data so that it can be visualized with standard quantitative techniques to observe trends and patterns within the larger corpus of text remains one of the most effective ways to visualize textual data. While individual units of text provide a richer picture when left in uncoded form, the restructuring that results from the qualitative coding process affords a better glimpse at the meaning of the corpus of text as a whole, as it allows each individual unit to be more readily understood in relation to the others.

2.6 Ethical considerations related to use of online public foster care data

Online communities and social media are increasingly common platforms of communication and expression for young people and are often the source of large textual public data. Some of the most popular platforms, like Reddit, are also pseudonymous, which is known to have a disinhibiting effect on what a person is willing to write online (Ammari et al., 2018). Between the naturalistic aspect of the conversation and the potential for people to feel comfortable writing openly about their experiences, studying text from these spaces has the potential to lead to insights that might not be gained through more traditional research techniques like interviews and surveys. Beyond the potential of this data source to provide new insights, there are also implications for the researcher, as it takes careful consideration to handle sensitive data with these characteristics in an ethical manner. Even though Institutional Review Boards tend not to treat this type of data as human subjects research, Fiesler (2019) advocates that researchers “think more broadly about the types of harms that are possible” in publishing research based in public social media data (p. 2); Fiesler (2019) recommends employing practices like the removal of personally identifying information from quotes, removing deleted posts from research, not archiving datasets, and special consideration of data from sensitive populations. Fiesler & Proferes (2018) more generally point out the applicability of the Belmont Report, with its focus on respect for persons, beneficence, and justice, as a document that can help guide a researcher in making ethical decisions in the context of their own particular study. Proferes et al. (2021) also point to the importance of considering discoverability on Reddit, with recommendations to not quote or include usernames in research. The authors also point to issues related to studying larger subreddits (e.g., Reddit’s sorting algorithm can drive conversational patterns in subreddits or threads with many posts) and with smaller subreddits (e.g., smaller subreddits may be less comfortable with researcher presence). Additionally, the authors emphasize that concerns related to representativeness and generalizability of findings should be considered, especially when building language models using Reddit data. In the context of studying online posts by people who have spent time in the foster care system, it makes sense to follow similar guidelines to Fiesler and Proferes by not including usernames, not quoting posts at all (minimizing risks of discoverability is especially important in this context due to the sensitivity of many foster care experiences), removing deleted posts from analysis prior to publishing, not publicly archiving the dataset, and presenting findings with caveats of generalizability. While carefully considering the privacy, autonomy, and safety of individual community members, this data collection technique can be used to learn from the rich descriptions and experiences of community members in order to provide deeper insights into online community activity and dynamics among people with lived experience in the foster care system.

Ch 3: Methodology Overview

This chapter provides a brief, high-level overview of the methods used throughout this dissertation. For more information on exactly which methods are used in each study and the details of how those methods are employed, see Sections 4.2, 5.2, 6.2, 7.2, and 8.2.

3.1 Observational Study Methods

3.1.1 Online Community Data Collection

Data from an online community on Reddit was collected using the Python Pushshift.io API Wrapper (PSAW) package. As the name suggests, PSAW is a Python package with a well-maintained wrapper of the Pushshift.io API that can be used to collect specified data elements from a specified subreddit over a specified time period. For this dissertation, the collected data came in the form of comments and submissions (referred to collectively from here on as “posts”) and metadata including timestamps and flair (i.e., a visual tag that a community member can use to provide additional context uniquely within each subreddit that they post to). The data came from the subreddit r/Ex_Foster from the entire first year of the community’s existence (i.e., 3/22/2019 – 3/21/2020). The data was exported as a CSV into R for data cleaning and analysis. Data was also exported from R into Excel (.xlsx) files for qualitative coding purposes. Descriptions of the methods of data cleaning, and descriptive analyses of the quantities of posts, posters, and threads are also provided. See Sections 4.2, 5.2, and 6.2 for more information.

3.1.2 Qualitative Coding

All posts from the dataset were classified for a variety of analytical concepts through the process of qualitative coding. A team of researchers performed a systematic qualitative coding exercise of several analytical concepts including: *Role*, *Courtney’s Domains*, *Sentiment*, and *Speech Acts*. For each code, one pair of researchers coded the concept for a random subset of posts. The pair then discussed any disagreements and came to consensus. I then coded a random 10% sample of each pair’s agreed upon codes to ensure their accuracy and quality. Percent agreement between myself and the team for those 10% samples was reported for each analytical concept.

The *Role* analytical concept is related to the whether the poster indicated that they had lived experience in the foster care system. The *Courtney’s Domains* concept identifies domains of the foster care experience discussed in each post. The coding of this concept included a deductive step to identify the presence of eight original domains from traditional social work literature, followed by an inductive step in which 15 new domains were derived. Coding of the *Role* and *Courtney’s Domains* analytical concepts is described in detail in Section 4.2. These concepts were included as part of the analysis in Chapters 4 – 6. The *Sentiment* analytical concept refers to the feelings of the poster in regards to the domain(s) being discussed in the post, and the *Speech Acts* analytical concept refers to the types of communication included in a post. The coding of these two analytical concepts is described in detail in Section 5.2. These concepts were included as part of the analysis in Chapters 5 and 6.

3.1.3 Natural Language Processing

One additional analytical concept – *Permanency Topics* – was classified on all the posts in the dataset. However, instead of a team of researchers qualitatively coding posts for this concept, a pre-processing technique commonly used in Natural Language Processing (NLP) called lemmatization was used to identify the presence of key search terms related to the child welfare

concept of permanency in each post. Lemmatization groups together different forms of the same word to enable comparison against a standardized key search term. In this dissertation, each post was lemmatized in R using the “lemmatize_strings” function from the “textStem” package. See more details in Section 6.2.

3.1.4 Statistical Testing and Descriptive Statistics

After coding the posts using qualitative coding or lemmatization techniques, observed frequencies of posts were analyzed using statistical testing and descriptive statistics across the various analytical concepts. These analyses were performed using R. Common descriptive statistics throughout the dissertation include counts and percentages. For statistical testing, chi-squared tests were used in several instances to differences in observed frequencies of posts between the two *Roles* were statistically significant. Odds Ratios were also often calculated to understand the sizes of the observed effects. In instances where multiple comparisons were being made, p-values were adjusted using Bonferroni corrections. For more details on these techniques and how they were applied, see Sections 4.2, 5.2, and 6.2.

3.1.5 Data Visualization

Following these quantitative analyses of the data, results were frequently communicated visually with adherence to perceptual principles of quality data visualization. Charts were constructed in both R and Excel to demonstrate how one can produce high quality visualizations with or without programming expertise. Examples of charts in this dissertation include line charts to show trends over time, bar charts to allow comparison of percentages, and heatmaps to facilitate comparison of frequencies across multiple dimensions. FosterCommViz – an interactive heatmap data visualization tool – is provided to visualize all of the qualitatively coded data along the dimensions of each of the four analytical concepts (see Section 5.4.4). In addition, some data is presented in tables, which are also constructed to display the data in ways that visually enhance the reader’s capacity to read them (e.g., displaying categories according to numerical results in descending order). See Chapters 4 – 6 for more details on how data visualization was used to communicate findings.

3.2 Design and Evaluation Methods

3.2.1 Brainstorming and Affinity Diagramming

To get started with the design of a visualization research tool relevant to the child welfare space, the research team read and discussed relevant literature, child welfare blogs, and advocacy organization websites. Then, based on several prompts related to identifying issues and associated barriers and opportunities for change, the team wrote ideas on sticky notes, placed them on a whiteboard, and did an affinity diagramming exercise to brainstorm topics with opportunities for design. The group also brainstormed who to interview and what to ask them. After conducting the interviews, did another sticky note and affinity diagramming exercise (this time virtually using Miro boards) to understand opportunities and takeaways from the interviews. This was followed with a brainstorm of a design, along with design priorities, data concepts, and tool specifications for achieving that design. See more details on how brainstorming and affinity diagramming methods were used in Section 7.2.

3.2.2 Expert Interviews

Based on the research team brainstorm, an interview protocol with the motivation for the study, a list of potential interviewees, a set of questions to ask, and finally an interview script was developed in an iterative process. After reaching out to potential interviewees and scheduling, five expert interviews were conducted on Zoom. Each interview lasted approximately 25 minutes, and included a moderator and one or two notetakers from the research team. After the interviews, the notes from each session were analyzed, and key opportunities and takeaways were identified as a set of bullet points. These bullet points were used in a brainstorming and affinity diagramming exercise to build out our design plan. For more information on the expert interview process, see Section 7.2.

3.2.3 Prototyping of an Online, Interactive Data Visualization Tool

Based on the design plan developed from the expert interviews, a prototype of an online, interactive data visualization was constructed in R using the “R Shiny” package. R Shiny provides code that allows for the creation of an interactive web application directly from R (or R Studio). The prototype uses administrative child welfare data that was cleaned in R, and visualizations were created using the “ggplot2” package. With the detailed information from the expert interviews as a guide to initial tool creation, the prototype was built in medium-to-high fidelity. In order to share the tool and receive feedback via remote usability testing, the prototype was uploaded to the Shinyapps.io online hosting service in the cloud. After receiving feedback in the remote usability testing sessions, the prototype was updated with revisions and additions. This working prototype – known as VizCare – was then made available for public use. See Section 8.2 for more details on the process of how the interactive prototype was developed and shared.

3.2.4 Remote Usability Testing

After the prototype of an online, interactive data visualization tool was created based on findings from the expert interviews, remote usability testing was used to understand how well it actually met the needs of the intended audience. A small team of researchers carried out remote usability test interviews with nine professionals in the child welfare space. These interviews were conducted virtually on the platform UserTesting.com with the interviewee sharing their screen, video, and audio as they worked through a series of scenarios and tasks led by a moderator and a notetaker from the research team. Each interview lasted between 40 to 60 minutes, and participants were compensated by UserTesting.com at a rate of \$1 per minute. First, participants were introduced to the study, asked for their consent to be involved, and asked four pre-test questions about their professional background. Then, the participants were asked to open the prototype of the tool and complete three scenarios, each with four to five tasks. Participants were asked to talk aloud as they went through the scenarios and tasks, and were asked to rate the difficulty of each task. After completing the scenarios and tasks, the participants were asked to answer five post-test questions related to the usability of the tool. Participants were finally given an opportunity to provide any additional open-ended feedback before finishing the interview. The notes from these remote usability tests were analyzed by the research team in Figma using a three-step process to develop a prioritized list of findings that could be used to direct revisions to the prototype. For more information on the use of remote usability testing methods, see Section 8.2.

3.2.5 Surveys

After making changes to the prototype based on feedback from the remote usability tests, the tool was made available for public use. The tool was first made available to the public on the Monday

prior to the largest social work research and policy conference of the year. For the first month that the tool was made available, a short survey was created to garner feedback on who was interested in trying out the tool and how useful they considered it be for their work. The survey was built using Google Forms and had five optional questions, taking only a minute or two to complete. Results were anonymous, with a few background questions on the professional interests of the participant, a few questions related to the usefulness of the tool, and an open-response general feedback question. To recruit participants, fliers with the survey link were distributed at the conference. Links were also sent out to Special Interest Group listservs immediately following the conference and to the expert interviewees who helped inform the design of the tool. Additionally, the link for feedback was embedded at the top of the “Welcome” page of the tool during that month so that anyone who stumbled upon the tool itself had an opportunity to provide feedback. Responses were analyzed to understand the use of the tool “in the wild” and determine opportunities for future revisions. See Section 8.2 for more details.

3.3 Public Child Welfare Data Visualization Ethics Methods

3.3.1 Public Online Community Data Ethics

One source of data for this dissertation is posts and associated metadata from the r/Ex_Foster subreddit during the period of 3/22/2019 – 3/21/2020. On 12/26/2019, the University of Washington Human Subjects Division provided the following determination for research related to this data: “It has been determined that this submission does not involve ‘human subjects’ as defined by federal regulations. It does not require exempt status or IRB review.” Despite this, careful consideration was taken by myself and the team on how to proceed with this research ethically.

The first choice in the research process was identifying which online community to study. One of the reasons that this community in particular was chosen is that, at the time that observation of the community began, the r/Ex_Foster community guidelines explicitly stated that individuals who have never been in the foster care system are free to join, so long as they respect perspectives of people with lived experience in foster care. Recognizing my own positionality as someone who does not have lived experience in the foster care system, I chose to base our findings on a large set of posts made directly by people with lived experience in foster care guided by a coding system that was initially based in years of findings from child welfare research. The intent in focusing on these direct statements was to amplify and better understand perspectives of people with lived experience in foster care. The intent in guiding the coding process with an established descriptive framework from a research review of the topic was to make sure the analysis was principled and relevant to existing work on the foster youth aging out process.

Due to the highly personal nature of many posts and the relative vulnerability of the population, particular care was taken to ensure individual online privacy and to mitigate the risks associated with surveillance of individual community members. Specifically, the analysis was kept at a highly aggregated level and members of the community were not quoted in order to protect individual identities. Deleted posts were removed from the dataset at the time of analysis as a minimal consideration of the removal of consent. Relatedly, the dataset was not shared or made public in order to respect individual or community decisions to delete posts in the future. Finally, answering the research questions did not require us to contact individuals (i.e., the focus was on what had been stated publicly in the community), so contact was avoided in order to not disturb the space

and dynamics of the community. Instead, findings were collaborated on and/or checked with individuals outside of the community who have lived experience in foster care in order to guide proper interpretations.

3.3.2 Public Administrative Data Ethics

The second source of data for the dissertation is Adoption and Foster Care Analysis and Reporting System (AFCARS) data provided by the National Data Archive on Child Abuse and Neglect (NDACAN). Ethical considerations related to this dataset were more well-defined because of NDACAN's governing procedures related to access and use of the dataset. Per the Terms of Use Agreement that I filled out with my data order, dataset #257: "AFCARS Foster Care File, 6-month periods (FY2016A – 2021A)" was provided by NDACAN for the purpose of a study aimed to support child welfare professionals with creating useful visualizations of the data, especially for communicating AFCARS findings to policymakers. On 4/26/2022, the University of Washington Human Subjects Division provided a determination of this study being "exempt" from IRB review.

NDACAN provided the data with the removal of personally identifying information. Even still, several precautions were taken in order to ensure that no individuals could be identified via unique combinations of filtered demographics and locations: (1) data visualizations remained at the state or national levels, rather than county level; (2) all data was displayed in aggregate form as percentages or averages; and (3) underlying data was not available for download. In addition, per the Terms of Use Agreement, I was the only member of the research team to work directly with the datasets. In addition to these data protections, clear definitions and descriptions of the visualizations were provided within the tool, and understandings of the data being displayed were confirmed through usability testing. All charts have titles and labels that clearly define the data being shown. Because charts from the tool can be downloaded, this is particularly important to ensure that users are able to determine which filters were selected for the data being displayed on each chart without having to take note of it on their own.

3.3.3 Data Visualization Ethics

Regardless of the data source, there are ethical considerations relevant to the visual data display to accurately represent the information in the data. Some of the main pitfalls that I consider in the visualizations created for this dissertation come from Cairo (2019), especially (1) including the appropriate quantity of data for the visualization, (2) ensuring the visualization does not conceal any data, (3) clearly communicating uncertainty, (4) avoiding displays that suggest misleading patterns, and (5) examining whether the data reinforces pre-existing prejudices. To avoid these sorts of misrepresentations, the first step I follow is sticking to principles of high-quality data visualization that allow the data to accurately inform the audience (Cook et al., 2007). Additionally, clear and thorough explanations of the data being displayed are provided with accurate and accessible labels and descriptions. Finally, it is important to ensure that the intended design of the data visualization is what people truly see. Whether through formal usability testing or informal requests of data visualization review and interpretation from colleagues, some level of verifying that my design intentions were reflected in the final visualization product was carried out with each of the figures and data visualization tools included in this dissertation.

Ch 4: Online Community Research and Traditional Social Work Research (RQ1)

The period of transition for foster youth into independent adulthood is an important life stage, and one that has yet to be explored in HCI circles. In this chapter, we studied an online community centered on the experiences of former foster youth through the first year of its existence to better understand how online spaces are being used by this population. Our mixed-method study included the coding of all posts from the first year of the online community and offers a mix of quantitative and qualitative findings. These findings include alignments and gaps in an established descriptive framework from the field of social work as it relates to the online communication of people with lived experience in foster care. It also includes how the domains from the framework co-occur, and some potential implications of these co-occurrences. Future research on this subject is warranted, particularly related to why former foster youth seek online platforms to engage in conversations on these topics and how effective community members perceive the platform to be in safely and securely facilitating their needs.

In this chapter, “we” refers to the research team of myself, Mark Zachry, David McDonald, and members of the Spring 2020 DRG (see Acknowledgements).

4.1 Introduction & Related Work

4.1.1 Introduction

Imagine Jane, a hypothetical foster youth reaching the end of her time in the foster care system. With her particular situation presenting minimal prospects for reunification with her parents, permanent placement in kinship care, or adoption, she is confronted with the daunting task of transitioning to independent adulthood without the support of guardians. Jane needs to navigate the path of maintaining steady employment, finding stable and affordable housing, and attending school, all while making time to care for her own mental health and being there for her younger siblings. The social worker assigned to assist Jane through this process tries to help but is overwhelmed with too many cases to be there for her on every step of the winding path. Jane is left to figure out certain important and complicated steps on her own. Looking for others who have been through similar situations and who may be able to provide assistance, advice, or commiseration, Jane stumbles upon a community on the internet primarily for people with lived experience in foster care. She wonders, “What are the people in this community like? Are other people here for the same reasons as me?”

This work examines one online community oriented toward people with lived experience in foster care. Many of its participants are young adults—like Jane—who have “aged out” of the system. In this online community they share their thoughts and feelings about a wide range of topics.

We analyze topics of discussion in this community using a descriptive framework as an analytical lens to understand how this group of people with lived experience in foster care express themselves online. The descriptive framework we use to understand online discussion is derived from a research review of dozens of papers from decades of foster care research, and it is widely cited in areas of social work that focus on foster care. This framework, developed by Courtney (2009), is oriented around outcomes related to “aging out.” The framework characterizes a set of domains common to the experiences of many young adults exiting the foster care system in relation to their impacts on life outcomes.

In this chapter, we characterize topics of discussion in a successful and burgeoning online community centered around the needs and perspectives of people with lived experience in foster care. The remainder of this chapter is structured as follows. Immediately below we cover the related work most relevant to foster youth in transition to adulthood. We describe our methods, the field site, how we collected our data, and our qualitative coding approach. More specifically, we describe our qualitative coding process of the community's entire first year of posts with a particular focus on the domains identified by Courtney as well as other domains identified in our qualitative coding process that did not fit nicely into Courtney's framework. From this qualitative work, we highlight particularly resonant points at the community level and offer statistical analyses to address our research questions.

RQ 4.1: How appropriate are current frameworks for understanding domains of outcomes for foster youth in transition to adulthood when applied to concerns that people with lived experience in foster care express online?

RQ 4.2: How do concerns that people with lived experience in foster care express online extend current frameworks of domains of outcomes important to foster youth in transition to adulthood?

RQ 4.3: How does the co-occurrence of domains of outcomes prevalent in online discussion by people with lived experience in foster care reveal patterns that can inform further research on the transition to adulthood?

In our findings, we focus on the similarities and differences between the contributions of people who have experienced foster care and other participants in the community in order to highlight which topics might be particularly salient to people with lived experience in foster care. As part of our analysis, we identify important gaps in the descriptive framework that we used in our initial coding. Next, we extend our analysis, using clustering and a visualization to highlight patterns of co-occurrence among both the existing and new domains just identified. Lastly, we close with a discussion of the applicability of the framework to online communication among people with lived experience in foster care, describing potential implications of the identified gaps in the framework, and considering future work that might be appropriate as a result of the co-occurrence of specific domains.

Our characterization of this online community differs from some other studies in that we do not quote or highlight contributions from individual members of the community. We use this approach after an ethical consideration of the individual privacy and security needs of a vulnerable population discussing sensitive topics in a publicly accessible setting. Further, the use of exact quotes of specific details from posts is not necessary to answer our research questions.

This chapter makes several important contributions. First, we illustrate how appropriately a well-known framework focused on domains of foster youth outcomes applies to concerns that people with lived experience in foster care express online. Second, we demonstrate where these online expressions suggest other domains that may be missing from the framework but important to people with lived experience in foster care. Third, we produce a heatmap visualization that can serve as an artifact to guide scholars in future research on foster youth transitions to adulthood. We provide several examples of how this heatmap visualization could be used to examine co-occurrence of domains (both from the existing framework and newly identified ones) in online

discussions by people with lived experience in foster care. We show how the heatmap might be used to pinpoint particular areas of potential importance in future research on foster youth outcomes, believing that this type of visualization can help guide new and speculative research of importance to the life outcomes of this particularly underserved population.

4.1.2 Foster Youth Transition to Adulthood

Every year in the United States, many individuals face situations that parallel our hypothetical Jane's. Young adults are said to have "aged out" of the U.S. foster care system upon reaching a certain age – typically between 18 and 21, depending on the state – if they have not been permanently placed in the care of family or other guardians (Courtney, 2009). When a youth ages out, they transition from the care of the state into independent adulthood. Scholars in the field of social work have studied this process and outlined many of the difficulties that accompany it (Dworsky & Courtney, 2009; Reilly, 2003). In particular, Courtney's (2009) research review on the transition to adulthood for foster youth outlined eight domains common to the experiences of foster youth during the transition period. Courtney focused on these domains as they relate to life outcomes, identifying the domains by performing an extensive review of 33 studies on outcomes for aged out populations of people with lived experience in foster care published between 1965 and 2007. Courtney summarized the findings of these studies to develop the eight domains, which he labelled Education, Physical and Mental Health, Substance Abuse, Criminal Justice System Involvement, Employment and Economic Self-Sufficiency, Housing and Homelessness, Family Formation, and Family Relations. See Table 4.1 for more detailed descriptions of each domain.

As this Courtney's review has a significant number of citations within the social work field, and he has received many citations on foster care related works over the years, we can be confident that his findings are well-respected and influential. However, Courtney (2009) points out that a limitation of his review is the dated nature of some of the studies that were included. In this chapter, we validate the applicability of these domains on a very recent dataset. Additionally, by observing naturally occurring discussions we are able to identify potential gaps in domains of importance to people with lived experience in foster care that were not included in Courtney's original review.

4.1.3 Youth and Technology Use

Researchers in the HCI community have been interested in youth or teens and their relationships to technology for over 20 years. Some of the early research focused on teen use of SMS and their mobile phones (Grinter & Eldridge, 2001; Grinter & Palen, 2002). Over the 20 years of research where youth technology use has been the main focus, studies have considered the influence of parents (Davis et al., 2019), use as a form of addiction (Lanette et al., 2018), parental monitoring of use (Ghosh et al., 2018; Ghosh et al., 2020; Yardi & Bruckman, 2011), how youth consider surveillance (Hautea et al., 2017) and aspects of parental control as a form of surveillance (Ghosh et al., 2018). During this time researchers have also branched out to consider relationships of youth to individuals and groups beyond their parents.

With the growth of online Social Networking Systems, researchers considered how youth use SNS (Forte et al., 2014), how that use might expose them to risks generally (Wisniewski et al., 2015) as well as specific uses that might create risks (Encinas et al., 2018; Hartikainen et al., 2021), and the way youth think about mitigation or potential resolution of undesirable online problems (McHugh et al., 2017; Schoenebeck et al., 2021). While much work focused on problematic issues

for youth participation online, other studies considered positive aspects of civic engagement (Farnham et al., 2012; Irannejad Bisafar et al., 2020), the development of online conflict resolution skills (Jagannath et al., 2020) and how interventions might reduce specific aspects of potential self-harm (Roth et al., 2020).

In parallel with the general interest in youth technology use, CHI and CSCW has grown increasingly interested in technology use by youth with marginalized, intersectional, and underrepresented identities. Studies have considered youth technology use in LGBTQ (Homan et al., 2014), Latinx (Pina et al., 2018), Black (Rankin & Henderson, 2021), and Indigenous (Vigil-Hayes et al., 2021) communities. The studies are often interested in the ways that we can design new technology to reduce exclusionary barriers and broaden participation in online environments.

Our research falls within the broad thread of work that considers the way youth use technologies. We have focused on one intersectional group, youth who are transitioning to adulthood and who, as a result of that transition, are “aged out” of the foster care system. This identity of someone who has previously spent time in foster care has unique concerns that may vary from those of others, and may be distinct from youth still in foster care.

Scholars in the field of social work have pointed out the importance of social support systems for youth transitioning out of foster care (Collins et al., 2010). Reports have also found an increase in possession and use of smartphones in recent years among foster youth, with the particular consequence of youth using the technology to help “build meaningful relationships” (Denby Brinson et al., 2015). With the rise of online communities over recent years, we ventured to see how the field of HCI has covered this potentially large avenue for social support and relationship building for foster youth in the transition to adulthood. To date, most HCI research on this subject is centered on the important areas of how algorithms impact policy and practice in the child welfare system (Saxena et al., 2020) or understanding and designing for the particular risks that foster youth may face online (Badillo-Urquiola et al., 2017; Badillo-Urquiola et al., 2019; Wisniewski et al., 2017). We will discuss these papers in more depth here.

Saxena et al. (2020) published a poster and a paper examining the impact of algorithms on policy and practice in the child welfare system. The poster offers an empirical contribution based on observations of child welfare system meetings to determine what role algorithms have in decision-making processes like placement of youth. The authors identify a need for human-centered algorithms to better support child welfare practice. In this domain, the authors’ paper presents a systematic literature review of algorithms used in the U.S. child welfare system (Saxena et al., 2020). The authors find that most current literature on algorithms in child welfare is based on risk assessment models, leading them to advocate for the design of human-centered algorithms that are more theoretically robust and include the perspectives of caseworkers.

In a poster presentation of an interview study of foster parents, Badillo-Urquiola et al. (2017) found that foster youth often face a unique set of online risks based on trauma experienced during childhood. The authors followed this presentation with a paper (Badillo-Urquiola et al., 2019). Foster parents indicated that these unique experiences sometimes translated into high-risk online interactions, with consequences being as serious as facilitating sexual violence against the youth

in some cases. All of this presented foster parenting challenges, as parents expressed concern at how to manage some of the negative online difficulties associated with mobile phone use.

Badillo-Urquiola et al. (2017) also published an extensive, interdisciplinary literature review of foster youth and the online risks that they might face. While finding some tension between the benefits and risks associated with online technology use, the authors also pointed out three important gaps in the literature. The first was better understanding technology-based initiatives aimed at positive relationship building for foster youth. The second gap was related to a lack of empirical findings regarding the role of technology in foster youth outcomes. The third was a gap in understanding how to mitigate online risks for foster youth. Recommendations from the paper included stronger engagement of the youth voice in research, as well as a call for deeply engaging in the ethical complexities that direct youth engagement entails. The authors followed these recommendations up with several extended abstracts, including one in which they proposed participatory design as a method that could give people with lived experience in foster care a voice in designing for their own online safety and security (Wisniewski et al., 2017). In other work, they elaborated on ethical considerations when doing foster care research, particularly focusing on consent and assent, confidentiality and privacy, and data sensitivity (Badillo-Urquiola et al., 2017).

This chapter aims to extend the work of other researchers in the foster care HCI field in a few ways. One way is by focusing exclusively on people who have experienced foster care, rather than foster parents, social workers, or the mechanisms by which the foster care system functions. Another way that we extend current literature is by focusing on foster youth who are transitioning into adulthood and those already in their adult years, rather than foster teens. Beyond just extending the role in the foster care system and age of our participants as compared to previous foster care HCI research, this chapter also addresses several gaps and opportunities specifically laid out by Badillo-Urquiola et al. (2017). Our research helps to fill the first gap that the authors point out by providing evidence of how people with lived experience in foster care are using technology (specifically, online communities) to build relationships, though this use is naturally occurring rather than being driven by a centralized initiative. Additionally, this chapter helps to address the second gap the authors point out by contributing empirical findings on outcomes for people with lived experience in foster care as understood through disclosure in an online community. Finally, our work begins to address another need the authors express by showing one way to base foster care research in the voices of people with lived experience in foster care themselves, as our findings are exclusively grounded in online discussion from individuals who have spent time in the foster care system. In filling these gaps, this chapter is valuable as a means of improving the foster care in HCI community's collective understanding of technologically-mediated relationship building and navigation of important life outcomes for people with lived experience in foster care.

4.1.4 A Pseudonymous Online Community

The online community we analyze is located on Reddit, under the subreddit r/Ex_Foster. This specific community is appropriate for research as it meets our criteria of being comprised primarily of people with lived experience in foster care while also being public and stating that it is open to outsiders. To understand the dynamics of social interaction within this community it is important to consider affordances of the Reddit platform itself. In particular, research shows that within communities that discuss mental health, Reddit can be particularly valued by users in order to meet needs for self-disclosure and social support through the disinhibiting effects of pseudonymous

communication (De Choudhury & De, 2014). Essentially, Reddit is a pseudonymous site (in which some users seek to achieve complete anonymity through the use of one-time “throw-away” accounts) where individuals often come to both share information on a topic and receive support from like-minded counterparts.

The affordances of pseudonymity in online communities show up in numerous studies related to a wide variety of communities that tend to discuss private and sensitive topics. In a study on parenting roles, Ammari et al. (2018) show that pseudonymous communication facilitates the disclosure of sensitive topics that individuals may not feel comfortable disclosing otherwise. Maltby et al. (2018) had a similar finding, showing that pseudonymity in an online military community disinhibited individuals toward self-disclosure. The authors particularly considered how pseudonymity related to the disclosure of mental health issues and how this disclosure lent credibility to the generation of a collective military identity on the platform. Additionally, Phillips (2002) showed that pseudonymous discourse in an online community related to sexuality allowed for individuals to control their identity and engage in discussions of private and sensitive topics without fear of physical endangerment. For these reasons, the pseudonymous nature of communication on Reddit makes it an unsurprising platform for individuals to gravitate toward for public-facing discussion of private topics like those included in the domains described earlier (Courtney, 2009).

4.2 Methods

4.2.1 Dataset

For the study described in this chapter, we downloaded posts and other metadata from the public subreddit *r/Ex_Foster* starting with its inception on 3/22/2019 and running through the end of the day on 3/21/2020. The dataset included 2,486 posts from 368 different posters organized in 194 distinct threads. Of these 2,486 posts, we used 2,389 of them for our final analysis as there were 53 posts that came from “testimonial” threads and 44 were posts that contained no text. We removed the “testimonial” posts because they were formulaic responses to a specific set of structured questions and we did not want these to bias the responses of the more natural discussions in the group. The metadata we downloaded included the pseudonym of the poster, the timestamp of the post, and the flair of the poster. On Reddit, flair is a type of tag that a poster can attach to their pseudonym or post to provide additional information or context.

The member count for the subreddit at the end of the data collection period numbered 1,681 individuals, more than double the member count of 793 noted when we first began observation on 10/10/2019. We note that the subreddit continued to grow after our data collection period, as the member count was 3,006 individuals as of 5/13/2021. The distribution of poster engagement for the subreddit over the first year reflected those of a typical online community, with a small number of individuals posting in high frequency and many individuals posting infrequently or only observing. Additionally, a private chat was introduced to the group in December 2019. This coincided with a slight, short term drop off, and subsequent rebound, in poster engagement (see Figure 4.1). While there are multiple other subreddits on the topic of foster care – most notably *r/FosterIt* – we chose this one because it 1) centers the voices of people with lived experience in foster care; 2) permits individuals who have never been in the foster care system to join, so long as they respect perspectives of people with lived experience in foster care; and 3) is a new and growing online community.

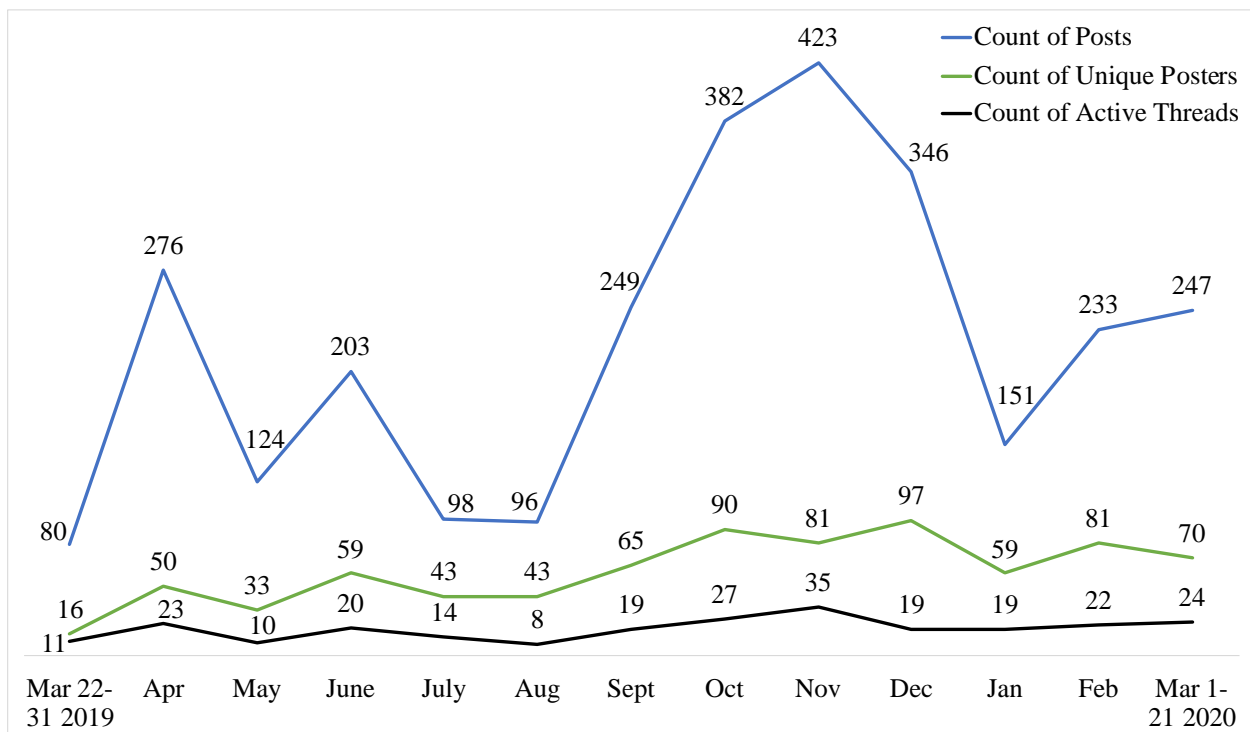


Fig. 4.1 Chart of r/Ex_Foster community engagement. This graph shows three metrics of poster engagement in the r/Ex_Foster community for each month over the first year of its existence. The blue line shows the total number of posts during each month, the green line shows the number of unique posters, and the black line shows the number of active threads (i.e., threads that received at least one post during that month). Note that the first month begins on March 22nd, 2019, as that is the inception date of the community, and the final month ends on March 21st, 2020, as that marks the one-year anniversary of the community’s existence.

4.2.2 Ethical Considerations

As noted in Section 4.2.1 above, one of the reasons that we chose to study this community in particular is that the community guidelines explicitly stated that individuals who have never been in the foster care system are free to join, so long as they respect perspectives of people with lived experience in foster care. We want to be clear that no one on the research team for this study has at any point been directly involved in the foster care system. I tutored several people with lived experience in foster care through a local non-profit organization on a weekly basis from January 2017 through their graduation from high school in 2021. From these experiences, I have some prior knowledge of the difficulties that foster youth in transition to adulthood may face. We make this statement to recognize that we are essentially outsiders to this system, and therefore have based our findings on a coding system developed from a widely recognized study by a prominent social work scholar as applied to a large set of posts made directly by people who are currently or have previously spent time in foster care from r/Ex_Foster. Our intent in focusing on these direct statements was to amplify and better understand perspectives of people with lived experience in foster care. And our intent in guiding it with an established descriptive framework from a well-respected research review of the topic was to make sure our analysis was principled and relevant to existing work on the foster youth aging out process.

Our university’s Institutional Review Board determined in December 2019 that our study did not need to be reviewed as human research under federal guidelines. Despite this, we carefully considered how to proceed with our study in order to protect the privacy of participants in the r/Ex_Foster community. In doing so, we acknowledge the importance of individual online privacy and the risks associated with individual surveillance of members of a vulnerable population like people with lived experience in foster care (McDonald et al., 2020). Specifically, we kept our analysis at a highly aggregated level and chose not to quote members of the community in this chapter in order to protect individual identities. We also note that answering our research question did not require us to contact individuals in the community.

4.2.3 Qualitative Coding

We followed three procedures for coding the data. The first consisted of me reading all 2,389 posts and the posters’ flair in randomized order while making note of six analytical concepts and possible responses. For the purposes of this chapter, we are interested in one of those six analytical concepts: *Role*. Any poster identified as having spent time in the foster care system at some point in their life is designated the *Role* code of People with Lived Experience. Any poster without indication of having been in foster care at some point is designated the *Role* code of Other Roles. These designations can either be made explicitly by the poster or inferred based on statements made in the post.

The second procedure for coding the data involved myself along with eight student researchers. Three of these students were in master’s programs and five were in undergraduate programs. The eight students were split into four teams of two for coding purposes. The four teams were assigned all posts in random order so that each post was read by both student researchers from exactly one team. We instructed the student researchers to read each post and indicate which of *Courtney’s Domains* (see Table 4.1 for descriptions of each domain) should be included as an answer to the question: “What discernible domains of the foster care experience are discussed in the post?” Within each team, both student researchers read and coded each post that their team was assigned. After coding independently, the two student researchers would compare results and reconcile any differences so that each team would submit one coded copy of the posts assigned to them. I also coded a random 10% sample of each team’s assigned posts to ensure high enough levels of agreement (see Section 4.2.4). In the end, all posts were coded for three analytical concepts. For the purposes of this chapter, we will be focusing on one of those concepts: *Courtney’s Domains*.

Table 4.1 Descriptions of each of the original responses in the *Courtney’s Domains* analytical concept. The domains are applied to each post based on this question: “What discernible domains of the foster care experience are discussed in the post?” Multiple domains can be applied to each post. If no domains can be discerned in post, then it is designated as having “No Domain.” The descriptions of each domain are paraphrased from the domains of common outcomes faced by foster youth during the transition to adulthood from Courtney’s (2009) research review.

Courtney’s Domains	Description
Education	Topics related to institutional learning. Some subtopics include educational attainment, enrollment, skills learned at school, and relationships with educators or tutors.

Physical and Mental Health	Topics related to the health of person’s mind or body. Some subtopics include physical illness or injury, mental health, medical coverage, hospitalizations, and interactions with health care professionals.
Substance Use	Topics related to a person using substances. Some subtopics include alcohol abuse, illegal drug abuse, prescription drug use, use of medical marijuana, and being around others with substance abuse problems.
Criminal Justice System Involvement	Topics related to criminal activity and the system of government institutions set up to deal with this activity. Some subtopics include incarceration, ticketing, interactions with law enforcement, crimes not caught by law enforcement, being temporarily housed in jail, recidivism, and being around others with criminal justice system involvement.
Employment and Economic Self-Sufficiency	Topics related to working and making money to support oneself. Some subtopics include employment, wages, public assistance, and ability to pay bills.
Housing and Homelessness	Topics related to where a person is living. Some subtopics include housing instability, homelessness, moving frequently, feelings around the concept of home, shelters, and group homes.
Family Formation	Topics related to a person who has experienced foster care forming a family of their own. Some subtopics include marriage, cohabitation, parenting, having a child, and choosing to be a foster parent themselves.
Family Relations	Topics related to relationships a person who has experienced foster care has with their biological family and/or foster family. Some subtopics include relationships with nuclear family, extended family, and foster family; interactions between biological and foster families; non-traditional concepts of family; and feelings about the concept of “foster to adopt.”
Other Domain	Topics related to an identifiable domain outside of the above eight domains.
No Domain	No topic is discussed or can be identified in the post.

Courtney’s Domains were derived from the eight domains of common outcomes for foster youth in the transition to adulthood (Courtney, 2009). We borrowed the domains verbatim with the exception of altering the domain of “Substance Abuse” to “Substance Use.” We adjusted this domain so that all eight domains would be neutral, allowing for a full range of sentiments on all the domain to be expressed. We also added a write-in domain of “Other Domain” if an identifiable domain outside of these eight is expressed in a post, and we added “No Domain” in case there is no identifiable domain discussed in the post. Descriptions of each individual code following *Courtney’s Domains* can be found in Table 4.1.

Our third procedure for coding the data is related to systematically understanding the Other Domain category of *Courtney’s Domains*. The Other Domain category required a write-in by the student researchers when a potential domain outside of one of Courtney’s original eight domains was identified in a post. For this part of the coding process, the two research team members who

had not yet been directly involved in the coding process (in order to reduce bias) were each given a unique set of 100 random posts that student researchers had identified as containing an Other Domain. The research team members coded each of these posts with their own domains, attempting to keep these domains at the same level of abstraction as those of *Courtney's Domains*. Then, I compared the set of other domains identified by two professors on the research team with the set identified by the student researchers for each of the 200 posts. The result was 75% agreement in domain topics identified by the two professors and the student researchers. However, we noted only 62% agreement when considering both the same topic and the same level of abstraction. To reconcile this, I took all the Other Domain codes that were identified by the student researchers and aggregated them under 15 new potential domains, attempting to keep the new potential domains at a similar level of abstraction as the original eight *Courtney's Domains* whenever possible. These new potential domains are discussed in detail in Section 4.3.2. In some instances, the student researchers indicated that a post contained an Other Domain, but upon my review, these either fit into one of Courtney's existing domains or did not actually contain an identifiable domain. These posts (which accounted for 2% of the 2,389 total posts) were excluded from the Other Domain analysis. Also, we note that at the end of the Other Domain disaggregation process, only 1% of the 2,389 total posts did not fit into one of the existing or new domains. This 1% of posts remained with a designation of Other Domain.

4.2.4 Coder Agreement

To ensure the accuracy and quality of the codes produced by the eight student researchers (i.e., four teams of two student researchers who coded posts for *Courtney's Domains*), I coded a random 10% sample of each team's codes. For the purposes of this chapter, we will report on the percent agreement for *Courtney's Domains*. Each of the domains might show up in any given post, meaning that random assignment of "Yes" or "No" would produce 50% agreement for each code, but the observed percent agreement was 78.6% on average across each of *Courtney's Domains*. The percent agreement for each individual code in *Courtney's Domains* can be found in Table 4.2.

Table 4.2 Percent agreement for original *Courtney's Domains*. This shows the percent agreement of the validation coding for each of *Courtney's Domains* for the random 10% sample. The relatively high levels of agreement suggest that the dataset has been coded reliably.

Courtney's Domains	Percent Agreement
Substance Use	83.3%
Family Formation	83.3%
Education	81.3%
No Domain	79.2%
Criminal Justice System Involvement	78.8%
Physical and Mental Health	77.5%
Employment and Economic Self-Sufficiency	77.1%
Housing and Homelessness	73.8%
Family Relations	72.9%

4.2.5 Statistical Testing

Once the domains were coded, we ran chi-square analyses with the null hypothesis that posts by People with Lived Experience and Other Roles groups came from the same distribution for domain frequency. We ran this analysis for each of the eight domains, as well as for Other Domain and No

Domain (see Table 4.3 for the complete set of results). We ran these tests comparing the resulting p-values to Bonferroni adjusted alpha values in order to take the multiple comparisons into account. Since there are 10 tests, our alpha value cutoff for considering a difference statistically significant was .005 (i.e., $.05 / 10 = .005$) for each of the 10 tests.

4.3 Results

4.3.1 Applicability of Courtney’s Domains to r/Ex_Foster Discussion

To answer RQ 4.1, we looked at how often each of *Courtney’s Domains* appeared in posts by People with Lived Experience, as well as how those rates compared to posts made by Other Roles. We started with an analysis of the frequency that People with Lived Experience include *Courtney’s Domains* in posts. The most frequent domains discussed by People with Lived Experience were Other Domains (prior to disaggregation into a set of new domains), Family Relations, and Physical and Mental Health, which each showed up in 47.6%, 46.2%, and 45.6% of posts by People with Lived Experience respectively. For each of *Courtney’s Domains*, People with Lived Experience discussed the domain more frequently than the Other Roles group. For each of the 10 chi-squared analyses, the resulting p-value was less than .001, well below our Bonferroni adjusted alpha cutoff of .005. This means that we can reject the null hypothesis and that the two groups differed significantly in their frequency of discussing these domains in their posts. This indicates that People with Lived Experience in r/Ex_Foster discussed each of *Courtney’s Domains* with a statistically significantly higher frequency than did Other Roles over the first year of the online community’s existence. The fact that each domain arose in natural discussion with some frequency by People with Lived Experience and in higher relative terms when compared to Other Roles in the community provides evidence that *Courtney’s Domains* are applicable to concerns people with lived experience in foster care express online. To be clear, this does not necessarily generalize to overall online discussion of People with Lived Experience or Other Roles, as this subreddit is established for the express purpose of engaging with issues relevant to people with lived experience in foster care. It does, however, provide evidence for the particular importance of these specific topics to people with lived experience in foster care (both absolutely and in relation to people who have not spent time in the foster care system) when people are online with the purpose of engaging with issues important to people with lived experience in foster care. Despite this evidence for the relevance of each of *Courtney’s Domains* to People with Lived Experience when engaging online with issues relevant to people with lived experience in foster care, the high percentage of posts by People with Lived Experience that included an Other Domain indicates that concerns expressed online by people with lived experience in foster care also extend the framework of *Courtney’s Domains*. This leads us to consider RQ 4.2 next by further analyzing and disaggregating this Other Domain category.

Table 4.3 Statistical differences in discussion of *Courtney’s Domains* by *Role*. This shows the frequency of domain appearance in posts by each *Role* and the results of chi-square analyses for each. Note that * indicates a statistically significant difference between People with Lived Experience and Other Roles when comparing p-values to Bonferroni adjusted alpha values (to take multiple comparisons into account).

Courtney’s Domains	People with Lived Experience	Other Roles	Chi-Square Result
Other Domain	47.6%	34.9%	$\chi^2(1, N = 2388) = 38.9, p < .001^*$

Family Relations	46.2%	30.0%	$\chi^2(1, N = 2388) = 65.4,$ $p < .001^*$
Physical and Mental Health	45.6%	28.0%	$\chi^2(1, N = 2388) = 79.2,$ $p < .001^*$
Housing and Homelessness	26.7%	10.9%	$\chi^2(1, N = 2388) = 94.8,$ $p < .001^*$
Education	17.3%	7.4%	$\chi^2(1, N = 2388) = 52.4,$ $p < .001^*$
Employment and Economic Self-Sufficiency	15.7%	8.7%	$\chi^2(1, N = 2388) = 26.7,$ $p < .001^*$
Criminal Justice System Involvement	12.9%	8.3%	$\chi^2(1, N = 2388) = 12.4,$ $p < .001^*$
No Domain	9.9%	27.1%	$\chi^2(1, N = 2388) = 117.8,$ $p < .001^*$
Family Formation	8.4%	3.0%	$\chi^2(1, N = 2388) = 30.8,$ $p < .001^*$
Substance Use	4.2%	1.5%	$\chi^2(1, N = 2388) = 15.4,$ $p < .001^*$

4.3.2 Disaggregation of Other Domains to Extend Courtney's Domains

In addition to the previously established and identified domains derived from Courtney are a set of identifiable domains marked as Other Domain that do not fit nicely in one these categories. These Other Domains are discussed in a relatively high percentage (47.6%) of posts made by People with Lived Experience, and thus deserve some attention. Better understanding the complexity of the Other Domain category will allow us to answer RQ 4.2. Through our qualitative coding process, we found that this Other Domain encompassed a wide variety of identifiable domains but could primarily be broken into three larger notions – Relationships, Group Affiliations, and Day-to-Day Considerations – which each had a set of related new domains within them. Individual descriptions of our findings for each of the 15 new domains are outlined in Tables A.1 – A.3 in Appendix A, but we will discuss the three broader categories and some of the most interesting individual domains here.

The Relationship category broadens the notion of with whom and under what conditions people with lived experience in foster care might be interested in making and strengthening connections. Foster Relations and Social Worker Relations were two examples of this. These two new domains both often focused on building and improving relationships with other people who have gone through similar experiences or who might have the expertise to help navigate the complexity of transitioning out of the foster care system. People with Lived Experience frequently described difficulties with bridging gaps between their own experiences and those of others who had not spent time in the system. The Holidays new domain highlighted that these gaps often made a holiday season a particularly difficult time to get through, and finding others who could relate was of particular importance during those times. This point was made visible in Figure 4.1, as the three months with the highest counts of posts were October, November, and December.

The Group Affiliations category indicates concern from People with Lived Experience on issues of identity, representation, and belonging. Some of these issues are closely related to the

underlying concerns brought up in the Relationship category. Particularly, the domains of Foster Care System Experiences and Representation in Media get at the unique and strong impact of being in the foster care system. These domains indicate that being in the foster care system can exert a high degree of influence on who foster youth become as adults. Stereotypes and misunderstandings of foster care experiences were frequently regarded as a wedge in relationships with people from outside the system. Also of note to People with Lived Experience were the impacts of stereotypes and discrimination in regards to sexuality, religion, gender, race, and other identities during time spent in the foster care system. The new domain Identity Factors indicates the continued importance of addressing systemic forms of discrimination as a key driver of improving the well-being of foster youth in adulthood.

Table 4.4 Frequency of new domain appearances within the Other Domain category in posts by each *Role*. The new domains are ordered descending by the frequency that they appear in posts by People with Lived Experience. At the bottom of the table, there is a unique row indicating the percentage of posts (roughly 1% of all posts) that remain with the designation of Other Domain after the systematic organization of this category.

New Domain	People with Lived Experience	Other Roles
Foster Care System Experiences	13.0%	8.2%
Internet	5.9%	3.3%
Food	5.9%	2.9%
Life Skills	5.5%	3.0%
Identity Factors	5.2%	3.6%
Representation in Media	4.0%	4.0%
Social Worker Relations	3.5%	1.6%
Other Relations	3.4%	3.4%
Holidays	2.9%	1.1%
Foster Relations	1.6%	0.0%
Romantic or Sexual Relations	0.5%	0.5%
Military Involvement	0.5%	0.3%
Transportation	0.3%	0.3%
Recreation	0.2%	0.5%
COVID	0.2%	0.3%
Other	0.9%	1.3%

The final broader category of new domains that we identified was that of Day-to-Day Considerations. This category indicates the importance of meeting the basic needs of foster youth as they transition into adulthood, and that the idea of what basic needs are might change over time. While some new domains like Food and Transportation are more long-standing, the relative recency of r/Ex_Foster is important to keep in mind when considering other new domains like the Internet and COVID. Reddit was only founded in 2005 and r/Ex_Foster only started in 2019. Explicitly considering the developing role of a transformational and increasingly ubiquitous technology like the Internet is important for adequately understanding the intricacies of the foster youth transition to adulthood in 2020. The fact that 5.9% of all People with Lived Experience posts (second highest percentage of the 15 new domains) contained the Internet domain is an indicator of the importance it carries in natural discussions at this time. While COVID was discussed in a relatively small percentage of posts, it is important to point out that data collection ended on March

21st, 2020, just as the virus was beginning to substantively change the daily life of most Americans. We do note that as of May 13, 2021, the only pinned thread (i.e., the thread remains at the top of the page) in the r/Ex_Foster community is titled “The COVID-19 thread” and it has 49 replies mostly related to resources for people with lived experience in foster care who have been impacted by COVID-19. While unsurprising that COVID has remained relevant, it is of interest that the community has remained active in relation to the virus and crowdsourcing resources to overcome difficulties that it has caused. This provides further evidence of the vital importance of the Internet to at least some people with lived experience in foster care.

The existence of the 15 new domains reflected in Table 4.4 under the larger categories of Relationships, Group Affiliations and Day-to-Day Considerations indicates a complexity of online expression by people with lived experience in foster care (and extension of previously identified domains of importance at the group level) for People with Lived Experience in r/Ex_Foster. These findings provide evidence that research on foster youth transitions to adulthood might more fully cover the topic area by drawing research questions from a wider range of domains.

4.3.3 Patterns Observed in Co-Occurrence of Courtney’s Domains

So far, we have analyzed both the applicability of and some potential areas that we can extend *Courtney’s Domains* in relation to the concerns of people with lived experience in foster care expressed in r/Ex_Foster. Now we turn our analysis to the co-occurrence of both these existing and newly identified domains in order to address RQ 4.3. In better understanding patterns of domain co-occurrence, we can gain insights into areas of a person with lived experience in foster care’s life that might intersect and potentially impact important life outcomes. This section will provide other researchers with the ability to further interrogate the patterns we have observed in our findings and potentially inspire areas of future research.

We start by noting that co-occurrence of domains in posts by People with Lived Experience is common. People with Lived Experience skewed toward including a higher count of domains (both new and existing) in a single post with a mean frequency of 2.9 domains per post while Other Roles had a mean frequency of 1.6 domains per post. Not only do they have higher mean numbers of domains in a single post, People with Lived Experience (74.2%) also have a higher percentage of posts with a co-occurrence of 2 or more domains than Other Roles (43.9%). This indicates a possible tendency for multiple and at least more of the domains to be relevant for People with Lived Experience than for Other Roles in r/Ex_Foster.

With evidence that People with Lived Experience had a greater tendency to discuss multiple of *Courtney’s Domains* in a single post, we explored patterns of co-occurrence among the domains. Figure 4.2 shows a heatmap of *Courtney’s Domains* from all posts by People with Lived Experience over the first full year of the community’s existence ($n = 1227$). The heatmap includes both the newly identified domains as well as the domains from Courtney’s original framework. Each tile on the heatmap shows the proportion of all posts containing the domain from a particular row that also contain the domain from a particular column. In mathematical terms, the hue of each tile is a proportion made up of a numerator and a denominator. The denominator is the number of all posts that contain the domain from that row. The numerator is the number of all posts that contain the domains from both that row and that column. Tiles with darker hues of blue have higher proportions, meaning that darker blue tiles are those where the domain from the column co-occurs

frequently whenever the domain from the row is present. For example, if we follow the “Military Involvement” row over to the “Criminal Justice System Involvement” column, we can see a darker blue tile. This means posts with the “Military Involvement” domain are also likely to contain the “Criminal Justice System Involvement” domain.

Observing darker blue (or lighter blue) tiles suggest higher prevalence (or absence) of a relationship between domains. These more heavily present (or absent) relationships might prompt us to ask questions or consider why certain high rates of co-occurrence might show up in the data. In the specific example of “Military Involvement,” we might consider whether joining the military is associated with higher rates of incarceration for people with lived experience in foster care down the line or whether interactions with the criminal justice system points people with lived experience in foster care toward military service.

The ordering of the domains on each axis is also meaningful. Note that the ordering from top to bottom is identical to the ordering from left to right. The order is based on a hierarchical clustering of domains. Hierarchical clustering is a method of clustering analysis that segments observations into similar groups (Murtagh & Contreras, 2012). In our case, the criteria for considering domains to be “similar” is based on the distance between the proportion of co-occurrence with each of the domains (i.e., the same proportion just described for coloring each tile). In other words, the clustering of two domains means that they exhibit similarities in how frequently (or infrequently) they co-occur with each of the other domains in the chart.

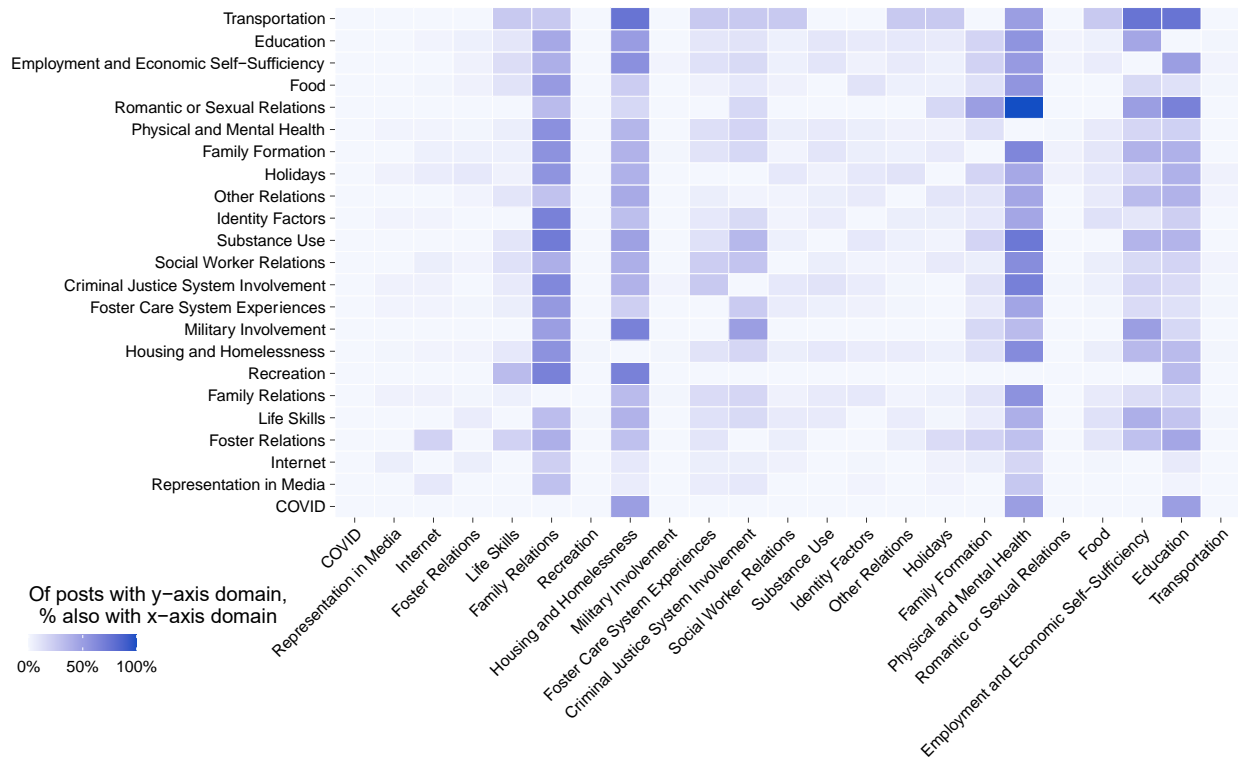


Fig. 4.2 Heatmap of *Courtney's Domains* co-occurrences. This is a heatmap of *Courtney's Domains* (both existing and new) from all posts by People with Lived Experience over the first year of r/Ex_Foster's existence (n = 1227). A PDF to a larger version of this figure can be accessed

[here](#). Each tile on the heatmap shows the proportion of all posts that contain the domain from a particular row that also contain the domain from a particular column. Tiles with darker hues of blue indicate a higher proportion of co-occurrence of the column domain in all posts that contain the row domain. For example, if we follow the “Transportation” row at the top over to the “Education” column on the second to the right column, we can see a darker blue tile, indicating that a high proportion of all posts with the “Transportation” domain also contain the “Education” domain. Also, note that the heatmap is not symmetrical across the diagonal, as the proportion of all posts that contain domain A that also contain domain B is not necessarily the same as the proportion of all posts that contain domain B that also contain domain A. For example, the tile corresponding to the “Education” row and “Transportation” column is light blue. This means that few of the posts related to “Education” also discuss “Transportation,” even though most of the posts related to “Transportation” also discuss “Education.” Finally, note that the order of the axes is meaningful. The order is based on a hierarchical clustering of domains according to the row-wise proportion of co-occurrence that is being visualized. For example, “Internet” and “Representation in Media” are adjacent rows at the bottom of the heatmap indicating that these two domains exhibit similarities in how they co-occur with other domains.

Continuing with the military and criminal justice system example, “Housing and Homelessness” and “Military Involvement” are adjacent rows on the heatmap. The adjacency of these two domains indicates similarities in the proportion of posts with which they co-occur across the set of domains. In this example, that might prompt us to consider if people with lived experience in foster care who are veterans have adequate housing support, as the domains that commonly co-occur with both of them tend to be similar (see the discussion section for further speculation on the nature of the possible connections outlined in this example).

Though we have not provided an exhaustive list or a definitive indicator of domain causal relationships, this chart addresses RQ 4.3 by revealing a complex set of patterns in domain co-occurrence that can guide future research. We have provided only one example in this section, as a means of demonstrating how to read the chart. However, many other such relationships exist. The high degree of dimensionality in the heatmap is a strength, as it allows researchers to explore a wide range of possible questions and to design studies aimed at discerning causality and greater generalization of the clusters and relationships illustrated from the r/Ex_Foster community here.

4.4 Discussion

4.4.1 Research Implications

This chapter reveals the topics people who have been involved in the foster care system discuss in an emergent, pseudonymous online community setting. Over the first year of the subreddit’s existence, the People with Lived Experience of r/Ex_Foster discussed many topics related to “domains of outcomes” that previous research shows are commonly faced by foster youth during the period of transitioning out of foster care and into adulthood (Courtney, 2009). These known domains identified in real world studies are confirmed to be relevant in a prominent online discussion forum, as People with Lived Experience discussed these eight domains derived from Courtney in a statistically significantly higher frequency than Other Roles did. Of these domains, People with Lived Experience seemed to particularly focus on Family Relations, Physical and Mental Health, and Housing and Homelessness in their posts, as these were the three with the highest frequency of appearance. As these domains were built from a framework developed

through decades of social work research, this chapter describing online interactions in an emergent community provides evidence that social workers are indeed studying domains of importance according to naturally occurring, contemporary discussions of people with lived experience in foster care. This finding is not necessarily one to be taken for granted, as it is noteworthy that these domains remain salient and important for these individuals even when the domains are not expressly prompted. We also note here that we have provided another example of a pseudonymous online community affording discussion of mental health, as the Physical and Mental Health domain was the second most frequently discussed in the community (Ammari et al., 2018; De Choudhury & De, 2014).

It is also interesting to consider those identifiable domains that People with Lived Experience discussed that are beyond the domains identified in previous research. People with Lived Experience brought up these Other Domains in a relatively high 47.6% of posts, indicating that they represent a substantive portion of the online discussion. Through our qualitative coding process, we found three main areas of focus within the “Other” domain for posts by People with Lived Experience. These three larger categories were notions of Relationships, Group Affiliations, and Day-to-Day Considerations. Within Relationships, many People with Lived Experience described interest in stronger and healthier connections with others including other People with Lived Experience, friends, and social workers, and finding like-minded people to spend time with during the holidays. This interest in making connections and using an online community to relate with others who may have similar life experiences provides evidence of people with lived experience in foster care using technology to build relationships and expand social support networks, as has previously been observed among youth during their time in the foster care system (Denby Brinson et al., 2015). For Group Affiliations, many People with Lived Experience desired freedom from discrimination on the basis of religion, sexual and gender identity, and race, while expressing a desire for more representative stories of people with lived experience in foster care to be shared in media. They also discussed involvement in the military and larger system-level impacts of foster care. The discussion of religion, sexuality, gender, and race here provides further evidence that pseudonymous platforms facilitate discussions of identity and other sensitive topics (Phillips, 2002). In terms of Day-to-Day Considerations, many People with Lived Experience wished they had been taught more practical life skills and given better access to their own official records, while also discussing topics related to essential needs like food, the Internet, transportation, and needs that have arisen due to COVID 19. These findings help to address the gap identified by Badillo-Urquiola et al. (2017) on the role of technology in mediating positive relationships for people with lived experience in foster care. The Relationships category provides evidence of some people with lived experience in foster care engaging with technology for relationship-building purposes. These relationships can be seen as multifaceted, as the Day-to-Day Considerations category indicates a practical level of support present in the community, while the Group Affiliations category indicates connection on a variety of deep and important social topics.

These potential gaps in Courtney’s original set of eight domains might be useful to consider as a way to highlight domains that are of importance to some people with lived experience in foster care, and perhaps flying under the radar of researchers who may not be accounting for how this population is interacting online. Recognizing that some people who have spent time in the foster care system are concerned with a wider range of relationships, can be deeply affected by and concerned with group affiliations, and are often preoccupied with day-to-day considerations might

be an important step in ensuring research properly addresses the developing needs of transition-aged foster youth.

When viewed in conjunction, the applicability of the eight original domains along with the 15 newly identified domains also help to fill the second gap (i.e., a lack of empirical findings related to technology and outcomes for people with lived experience) in foster care HCI literature identified by Badillo-Urquiola et al. (2017). Our work helps to fill this gap by providing an empirical, technologically-mediated understanding of the domains of outcomes most important to people with lived experience in foster care. While more work needs to be done to understand how technology impacts these outcomes, our research does show an example of how people with lived experience in foster care might use technology to relate to, understand, and work through issues related to these 23 domains of outcomes.

Not only are the applicability and possible extensions of *Courtney's Domains* to posts by People with Lived Experience of interest, but the clustering and interrelations of these domains are as well. Comparing the distributions of counts of *Courtney's Domains* in posts by People with Lived Experience and Other Roles shows that People with Lived Experience tended to discuss more of the domains within a single post than people representing the Other Roles did. The higher density of domains present in People with Lived Experience online posts begs the question of whether there are any particular patterns in how these domains co-occur. Looking at a heatmap of the previously existing and newly identified *Courtney's Domains* in People with Lived Experience posts allows researchers like us to identify interesting patterns of co-occurrence that are worth exploring further.

As an illustrative example, we showed how the heatmap could be used to observe the relationships in our findings between the domains of Housing and Homelessness, Criminal Justice System Involvement, and Military Involvement. This example serves to illustrate how our findings – as communicated via the heatmap – might serve to motivate and guide further research. In this case, we might want to look into issues of homelessness among people who are veterans and have spent time in foster care to see if these individuals are particularly susceptible to criminal justice system involvement. It is also interesting to note in this example that the tile corresponding to the “Criminal Justice System Involvement” row and the “Military Involvement” column (as opposed to the “Military Involvement” row and “Criminal Justice System Involvement” column that we have been following) is a much lighter shade of blue. These relationships are not necessarily symmetrical, which can be seen clearly in this example. The data does not indicate issues related to the military as being particularly salient when considering all criminal justice system involvement by people with lived experience in foster care in r/Ex_Foster even though the converse does seem to be the case.

One of the contributions of this chapter is to provide the heatmap in Figure 4.2 as a resource that researchers could use to investigate our highly-dimensional set of findings to motivate and guide future work on supporting or understanding the foster youth transition to adulthood. The many potential relationships and questions to consider here are beyond the scope of this initial study. However, for illustrative purposes, we suggest four additional domain relationships worth future investigation beyond the example we have discussed of Military Involvement, Housing and Homelessness, and Criminal Justice System Involvement:

- Foster Relations, Internet, and Representation in Media
- Holidays, Family Formation, and Physical and Mental Health
- Identity Factors and Family Relations
- COVID, Education, and Housing and Homelessness

Future analysis may help to determine the nature and underlying causes of these connections. Our intention is that this chart can be used as a tool to help guide social work researchers on foster youth during the transition to adulthood. We believe this might be particularly useful for the newly identified domains, as there may be less previous literature to guide hypotheses and potential interactions between variables in these areas.

Through this chapter we have made multiple contributions of note. We have provided evidence to validate and extend *Courtney's Domains* based on recent, naturally-occurring online expressions of concern by people with lived experience in foster care. We have provided another example of a pseudonymous online community affording discussion of sensitive topics, including mental health and identity issues. We have contributed to studies of foster care in HCI space by providing evidence that a group of people with lived experience in foster care are using online community technology to expand their social support network in both abstract and practical ways. We have also provided an empirical contribution to the foster care in HCI space by characterizing an example of how people with lived experience in foster care create and use an online space, particularly what they choose to discuss in such a space. Finally, we have produced a heatmap visualization to help guide future research related to the foster youth transition to adulthood.

4.4.2 Limitations

While informative of the dynamics of a prominent and pre-existing online community centered around the experiences of people with lived experience in foster care, we note the limitations of our study. Particularly, the population of posters in the subreddit we studied are self-selected and pseudonymous. Therefore, we can make no claims of generalizability from this study to the population of people with lived experience in foster care as a whole. We also must trust that posters are disclosing the truth about their backgrounds and experiences, while recognizing when information is assumed by us as researchers rather than actually disclosed by participants. Furthermore, we were unable to find a community that was solely dedicated to the period of transition from time in the system to early adulthood. This may indicate that such a community does not exist and therefore the creation of such a community may be an opportunity for future design work.

4.5 Conclusion

To the best of our knowledge, this chapter describes the first study of any online community dedicated primarily to providing a space for individuals who have at some point in their lives spent time in the foster care system. We have grounded our work in studies related to the transition period of foster youth into unsupported adulthood and the study of other online communities. After carrying out and evaluating an extensive qualitative coding effort, we used this dataset to produce various quantitatively and qualitatively-based findings. Regarding the domains of outcomes for people with lived experience in foster care discussed in this community, our findings both align with domains recognized as important by social work researchers and suggest several other potential domains of interest. Finally, we suggest several lines of further research to better

understand and support both the online and general needs of foster youth transitioning to adulthood.

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Fowler, J., Zachry, M., & McDonald, D. W. (2022). Fostering Communication: Characterizing the Concerns of Former Foster Youth in an Online Community. *Proceedings of the ACM on Human-Computer Interaction*, 6(GROUP), 1-23. <https://doi.org/10.1145/3492834>

Ch 5: Online Community Research and Online Policy Implications (RQ2)

Despite the existence of official system-based support like Independent Living Programs funded under the Chafee Program since 1999, people who are transitioning or have transitioned out of the foster care system continue to experience disproportionately negative outcomes in relation to their peers. In addition to or in lieu of system-based interventions, some people with lived experience in foster care turn to online communities to seek informal peer-based support and connection. This chapter provides a descriptive, quantitative analysis of qualitatively-coded posts from an online community for people with lived experience in the foster care system. The chapter gives empirical evidence and insights into some of the benefits and risks of membership in one such community. The results indicate that people with lived experience discussed topics of importance to the transition to adulthood in ways that are distinct from people who have not spent time in the foster care system. Within the discussion by people with lived experience, topics related to risks and protective factors tended to be discussed more negatively and with higher rates of personal disclosure, while topics that moved beyond basic needs were discussed with greater diversity of sentiment and speech acts. The implications of these findings include impetus for establishing guidelines aimed at caregivers, social workers, and tech companies that can allow individuals with lived experience in the foster care system to engage in online communities in ways that ensure access to the potential benefits while mitigating the risks.

In this chapter, “we” refers to the research team of myself, Mark Zachry, David McDonald, and members of the Spring 2020 DRG (see Acknowledgements).

5.1 Introduction & Related Work

More than 20,000 people are emancipated from the US foster care system each year, with the majority (16,000+) doing so at 18 years old (US Department of Health and Human Services, 2021). When children are emancipated – or “age out” – of the system, federal guidelines mandate that states assist children in the transition to living independently. Through the creation of the John H. Chafee Foster Care Program for Successful Transition to Adulthood (Chafee Program; formerly known as the John H. Chafee Foster Care Independence Program) under Title I of the Foster Care Independence Act of 1999, the federal government provides grants for states and tribes to develop programs that aim to “help with education, employment, financial management, housing, emotional support, and assured connections to caring adults for older youth in foster care” (Courtney et al., 2017). Despite these intended supports, the Chafee Program functions under the guise of guidelines rather than mandates to states, leading to wide differences in implementation of transition-related benefits across the country. Recent studies confirm that many people with lived experience continue to face difficult outcomes during and after the transition to adulthood in the areas where the Chafee Program provides support (Cheatham et al., 2020; Combs et al., 2018; Fowler et al., 2017; Geiger et al., 2018; Häggman-Laitila, Salohekkilä, & Karki, 2018; Miller et al., 2017; Rosenberg & Kim, 2018).

In addition to support available via formal system-based interventions like the Chafee Program, older foster youth may aim to manage challenges related to the transition period by developing their own support networks. Online communities are one medium where older teens and young adults from outside the child welfare system seek such forms of social support (Baams et al., 2011; Donovan et al., 2014; Lisitsa et al., 2020). Sage and Jackson recently published a research review

confirming that many young people with lived experience in the foster care system are also interested in and currently use forms of “Internet Communication Technologies” – of which online communities are a specific type – for these sorts of social networking and support purposes (2021). In their review, the authors point to the widespread mediation of online community (and other web-based technology) use by foster teens being centered on risk, as observed in the frequent restriction of internet access by caregivers and other system-involved adults. The authors argue that this risk-averse attitude obscures the value of multiple youth-identified benefits. These benefits cover a variety of areas including: Information and Resources; Maintaining Connections; Building Social Capital; Normalcy; For Recreation, Relaxation, Self-Soothing; Empowered Voice and Independence; and Identity Formation and Exploration (Sage & Jackson, 2021).

Sage & Jackson (2001) point to the lack of federal guidelines and policies related to the use of technologies like online communities as a void into which concerned adults have opted toward restriction. Such restriction comes instead of more nuanced support, which might allow for use with more secure outcomes. The authors also point to a research gap in the ways that online communities and other technologies provide value to foster youth and how foster youth “maintain healthy technology-mediated peer-based and supportive relationships” (Sage & Jackson, 2021, p. 2). Filling this gap would provide a basis of empirical understanding upon which researchers and policymakers might begin to outline best practices related to participation in online community, social media, and other technologies for system-involved youth. Informed policy and guidance for caretakers and other adults in the system could serve to help youth mitigate online risks while still permitting use of such technologies. Doing so might allow for safe inclusion of people with lived experience in the broader benefits of access and engagement available to their non-system involved peers.

To help fill this gap, a first step might be to better understand current practices of use of online communities for people with lived experience in the foster care system. Multiple online communities meet this description. Organizations like FosterClub and iFoster serve as structured, formal online spaces for current and former foster youth to engage with a larger community online (Borg, 2010; Resources for Foster Care Youth, Caregivers, and Organizations, n.d.). Additionally, grassroots communities of people with lived experience exist online too. These communities might be particularly interesting to consider in relation to the stated research gap, as they demonstrate the voices and initiative of individuals with lived experience navigating online spaces naturally. Ad hoc, grassroots communities can provide empirical evidence for exactly how people might choose to interact online given minimal direction on how to do so. Focusing on such a community can provide insight into online community use directly from the actions and perspectives of many individuals with lived experience in the foster care system.

With this naturalistic focus in mind, we identified an online community on Reddit under the subreddit r/Ex_Foster to focus on for this chapter. In Chapter 4, we analyzed the topics of discussion by people with lived experience in this community, focusing on discussions from the community’s inception over the full first year of its existence (Fowler et al., 2022). In this chapter, we extend this work and communicate our findings to a different audience who will have more intimate knowledge and expertise on how the findings might inform policy recommendations that can have a positive impact on the lives of foster youth in the transition to adulthood. With this rationale in mind, this chapter was guided by the following research question.

RQ: How do people with lived experience in the foster care system discuss topics significant to their lives through the medium of an online community?

To answer this question, the remainder of the chapter will be organized and motivated as follows. First, we will overview the data, ethical considerations, and methods of our study to give a background on how and why we completed the analysis. Then we will present our results and discussion. We first identify topics from the “domains of outcomes” in our previous research that align with several frameworks – *Courtney’s Domains* and *Sage & Jackson’s Benefits of Use* – in order to understand different types of topical discussion that occur in the online community. Within each of these topical areas, we then explore both the types of speech acts and sentiment that are used in these discussions. This analysis indicates for what purposes people might use an online space like this as well as the specific ways they feel about the different topics of discussion. Through our reporting and discussion of these analyses, we aim to (1) produce an empirical case study that might provide a basis of understanding for future research to guide policymakers on use of online communities and (2) demonstrate the necessity for developing such guidance. Finally, we will relate our findings to the existing literature, point out strengths and limitations of the study, and conclude with recommendations on future work in order to situate our findings to be most useful for the broader research community.

5.2 Methods

5.2.1 Data Collection

The dataset for this chapter consists of posts and associated metadata from the entire first year of the public online community *r/Ex_Foster* on Reddit. A network of thousands of online communities known as subreddits, Reddit is a website where registered members can connect and discuss a wide variety of topics. The same dataset and collection efforts relevant to this chapter are described in the study outlined in Chapter 4 (also in: Fowler et al., 2022). The data spans one year, from the online community’s inception on March 21, 2019 through March 22, 2020. Over that time 2,486 public posts were made in the community in 194 different threads of discussion. The total number of individuals who posted was 368 while the total number of members in the community reached 1,681 by the end of data collection. As of January 21, 2022, the number of members has grown to 3,300 individuals. Of the 2,486 posts from the first year of the community, we exclude 44 posts that contain no text and 53 posts that refer to a specific set of introductory questions. We exclude the posts related to the set of introductory questions because of our interest in naturalistic discussion, rather than communication that is structured and directed in this way. This means that our final dataset includes 2,389 posts. Additional metadata that we collected associated with each post includes the pseudonym of the poster, the timestamp of the post, and the flair of the poster. Flair is a tag that a poster can attach to their pseudonym or post on Reddit to provide a short amount of additional information. A common example of flair found in this community would be something like “Former Foster Youth.”

While other grassroots communities related to the foster care system exist online, we chose *r/Ex_Foster* as the best fit for our study because the “About” post for the community explicitly stated:

“A subreddit geared toward current and former foster kids, of all experiences and outcomes: Aged-out, adopted, reunited, kinship placements, group home residents. Success

stories, those barely scraping by, and everyone in between. Whether you appreciate your time in care or want to burn the system to the ground. A place for resources, support, and discussion. Non-fosters are free to join, provided they respect foster-kid perspectives.”

The centering of a diversity of voices from those with lived experience and openness to outsiders who are willing to respect those perspectives led us to believe that this would be an appropriate and fruitful community for better understanding naturalistic online community engagement of people with lived experience in the foster care system.

5.2.2 Ethical Considerations

While the community’s stated openness to outsiders indicated that it would be an appropriate fit for researchers like ourselves who had never spent time in the foster care system, we also wanted to take care that our work respected their perspectives both effectively and safely. In order to respect these perspectives effectively, this chapter is largely descriptive (with some between-groups statistical testing) with the intent of amplifying a large corpus of direct statements made by those with lived experience. However, in order to do so safely, we have chosen not to quote any posts from the community (other than the initial “About” post) in order to protect the privacy of community members. We take this precaution even though, in December 2019, the Institutional Review Board at our university determined that the public availability of our data meant that it did not need to be reviewed as human research under federal guidelines. Nevertheless, we recognize the known risks associated with individual online surveillance of current and former foster youth (McDonald et al., 2020). In the context of studying online posts by people who have spent time in the foster care system, it makes sense to follow similar guidelines to Fiesler (2019) by not quoting posts at all (to minimize risks of searchability due to the sensitivity of many foster care experiences), removing deleted posts from analysis prior to publishing, and not publicly archiving the dataset. Additionally, we have chosen to keep our analysis at the group level over a full year of discussion in order to get a sense of everything that might be important to members of the community without unwittingly putting any individual at unnecessary risk. See Section 3.3.1 for more discussion of ethical considerations taken with this work.

5.2.3 Qualitative Coding

To effectively describe the direct statements of members of the community at the group level, we classified those statements. The research team performed a systematic qualitative coding exercise of several analytical concepts including: *Role*, *Courtney’s Domains*, *Sentiment*, and *Speech Acts*. The coding process for the first two of these concepts were described in detail in Chapter 4, which focused on elucidating *Courtney’s Domains* as they relate to the posts in r/Ex_Foster, and developing a set of additional domains. Each of these four analytical concepts is described in greater detail as follows.

The *Role* analytical concept is related to whether the poster indicated that they had lived experience in the foster care system. This coding process for this concept was described in previous work. There are two possible mutually exclusive *Role* codes in this community. One code is People with Lived Experience, which includes all posters who were identified as having spent time in the foster care system at some point in their lives. The second code is Other Roles, which includes all posters with no indication of having spent time in the foster care system at any point.

The study described in Chapter 4 also focused on the coding process and analysis of *Courtney's Domains* as an analytical concept. This concept relates to domains of the foster care experience discussed in each post. The codes for this concept are not mutually exclusive and can show up in any combination within a single post. There are eight original domain codes derived from an extensive literature review by Courtney in 2009 of domains common to the experiences of foster youth in the transition to adulthood. These eight domains, which we call *Courtney's Domains*, include: Education, Physical and Mental Health, Substance Use, Criminal Justice System Involvement, Employment and Economic Self-Sufficiency, Housing and Homelessness, Family Formation, and Family Relations. Beyond these eight original domain codes, the previous coding process identified 15 additional domain codes derived from posts in this online community. While *Courtney's Domains* largely focus on physiological and safety needs, these additional domains help to build out a more complex picture of what might be important for a human to grow and lead a fulfilling life beyond the core set of risk and protective factors important to survival. These domains, which we call *Growth Domains*, include: Foster Relations, Social Worker Relations, Romantic or Sexual Relations, Other Relations, Holidays, Identity Factors, Representation in Media, Foster Care System Experiences, Military Involvement, Internet, COVID, Food, Life Skills, Transportation, and Recreation.

The remaining two analytical concepts – *Sentiment* and *Speech Acts* – are new to this chapter from the previous work that has been described. In the remainder of this subsection, we will outline the coding process for these two analytical concepts.

Sentiment refers to the feelings of the poster in regards to the domain(s) being discussed in the post. There are four possible mutually exclusive codes for the *Sentiment* analytical concept that could be applied to each post: Negative, Mixed, Neutral, and Positive. If the feelings related to the domain(s) in the post are exclusively negative or positive, then the prescribed code is Negative or Positive, respectively. If there are both positive and negative feelings expressed in relation to the domain(s) discussed, then the code is Mixed. If no feelings are identified in the post in regards to the domain(s) discussed, then the code is Neutral.

The *Speech Acts* analytical concept refers to the types of communication included in a post. The seven possible codes are Question, Recommendation, Disclosure, Acknowledgement, Emotional Expression, Informational Support, and Other Speech Act. These codes are not mutually exclusive and can show up in any combination within a single post. The explanation of each code of the *Speech Acts* analytical concept is as follows. Question is applied if a question is asked in the post. Recommendation is applied if a recommendation or some sort of advice is provided in the post. Disclosure is applied if previously private information (excluding the poster's opinion or preferences on a subject) is included in the post. Acknowledgement is applied if the post contains a statement explicitly affirming that the poster has read something written by a different poster in a different post. Emotional Expression is applied if there is an emotion expressed in the form of words, pictures, or emojis within the post. Informational Support is applied if information is provided that has the potential to help others problem-solve or information from a source external to the subreddit is included in the post. Other Speech Act is a write-in possibility applied if there is some sort of speech act included in the post that does not meet the criteria of the other six codes.

Both the *Sentiment* and *Speech Acts* analytical concepts were coded during the same process. This was also similar to the process described in the previous chapter for coding *Courtney's Domains*. This process involved myself and the eight student researchers – three of whom were in master's programs while five were in undergraduate programs. The eight students were organized into four teams of two for coding purposes. Each post was assigned in random order to exactly one of the four teams and both student researchers from that team were instructed to read the post. After reading the post, each student would independently indicate which *Sentiment* code should be included as an answer to the question: "What was the sentiment of the domains discussed in the post?" Similarly, they would also indicate which *Speech Act* code(s) should be included as an answer to the question: "Which speech act(s) were used by the poster in the post?" After coding independently, the two student researchers would compare results and reconcile any differences so that each team would submit one coded copy of the posts assigned to them. I also coded a random 10% sample of each team's assigned posts to ensure high enough levels of agreement so that the outcome of the coding process could be trusted for analysis.

5.2.4 Coder Agreement

To ensure the accuracy and quality of the codes produced by the eight student researchers (i.e., four teams of two student researchers who coded posts), I coded a random 10% sample of each team's codes. Quality of the coding process has already been assured for the *Courtney's Domains* and *Growth Domains* analytical concepts (see Section 4.2.4). For this chapter, we will report on the percent agreement for the newly introduced *Sentiment* and *Speech Acts* analytical concepts. For *Speech Acts*, each of the possible codes might show up in any given post, meaning that random assignment of "Yes" or "No" from both coders would on average produce 50% agreement for each code. However, the observed percent agreement was much higher at 75.3% on average across each of the related codes. The percent agreement for each individual code for *Speech Acts* can be found in Table 5.1.

Table 5.1 Percent agreement for *Speech Acts*. This shows the percent agreement of the validation coding for each of the *Speech Acts* for the random 10% sample. The relatively high levels of agreement suggest that the dataset has been coded reliably.

Speech Acts	Percent Agreement
Question	81.7%
Recommendation	77.9%
Disclosure	78.8%
Acknowledgement	75.4%
Emotional Expression	68.8%
Informational Support	69.6%

For *Sentiment*, only one of the four mutually exclusive possible codes can show up in any given post, meaning that random assignment of the four possible codes from both coders would on

average produce 25% agreement for the analytical concept. However, the observed percent agreement was much higher at 60.0% overall.

5.2.5 Sage & Jackson's Benefits of Use

In addition to these qualitative coding efforts, our analysis also includes codes of youth-identified benefits of using online technologies for communication purposes from Sage & Jackson's (2021) systematic review of the use of "internet communication technology" by youth in foster care. The titles of these categories will be referred to in our analysis as the *Sage & Jackson's Benefits of Use* analytical concept. The possible codes for this analytical concept include: Information and Resources; Maintaining Connections; Building Social Capital; Normalcy; For Recreation, Relaxation, Self-Soothing; Empowered Voice and Independence; and Identity Formation and Exploration.

5.2.6 Statistical and Descriptive Analyses

After coding the data, we completed three statistical and descriptive analyses. For the first analysis, we wanted to better understand any differences in how People with Lived Experience communicated in the online community compared to Other Roles. In particular, we were interested in how the posters engaged in communication with one another and how they expressed feelings in their posts, as differentiated by their *Role*. To explore this, we ran descriptive statistics, Chi-squared tests (with post-hoc Bonferroni corrections for multiple comparisons), and calculated odds ratios to compare observed code frequencies for the *Speech Acts* and *Sentiment* analytical concepts based upon the *Role* of the poster.

For the second analysis, we began by narrowing down to focus only on posts with the *Role* of People with Lived Experience. We wanted to explore particularities related to the types of communication and feelings associated with topics that have traditionally been focused on in social work literature on the transition out of the foster care system. To do this, we isolated the subset of all posts by People with Lived Experience. On these posts, we ran descriptive statistics, Chi-squared tests (with post-hoc Bonferroni corrections for multiple comparisons), and calculated odds ratios to compare observed code frequencies for the *Sentiment* and *Speech Acts* analytical concepts between posts that contain at least one of the *Courtney's Domains* codes and posts without any of the codes from *Courtney's Domains*.

For the third analysis, we remain focused exclusively on the *Role* code of People with Lived Experience, again focusing on particularities related to the types of communication and feelings associated with a set of topics. However, for this analysis, we wanted to understand these concepts as they relate to topics that have traditionally received less focus in social work literature while recently being identified as potential areas of benefit from use of online communication. To start, we performed a theoretical mapping of any codes from *Growth Domains* that we argue apply to *Sage & Jackson's Benefits of Use*. We defined this subset of domains as a new analytical concept: *Domains that Benefit from Online Discussion*. Then, for posts only by People with Lived Experience, we ran descriptive statistics, Chi-squared tests (with post-hoc Bonferroni corrections for multiple comparisons), and calculated odds ratios to compare observed code frequencies for the *Sentiment* and *Speech Acts* analytical concepts between posts that contain at least one of the *Domains that Benefit from Online Discussion* codes and posts without any of the codes from the *Domains that Benefit from Online Discussion*.

5.3 Results

5.3.1 Role Comparison

In the first analysis, code frequencies were compared for the *Sentiment* and *Speech Acts* analytical concepts based upon the *Role* of the poster. First consider the *Sentiment* analytical concept. Overall, posts by People with Lived Experience tended to be more negative than posts by Other Roles. A larger percentage (Odds Ratio = 1.9; $p < .001$) of posts by People with Lived Experience than Other Roles were associated with negative feelings. Alternatively, Neutral (Odds Ratio = 0.5; $p < .001$) and Positive (Odds Ratio = 0.7; $p < .01$) were feelings observed less frequently in posts for People with Lived Experience than for Other Roles. People with Lived Experience and Other Roles wrote a similar percentage (Odds Ratio = 1.0; $p = 1$) of posts that contained mixed feelings. The breakdown of *Sentiment* code frequencies by *Role* is shown in Figure 5.1.

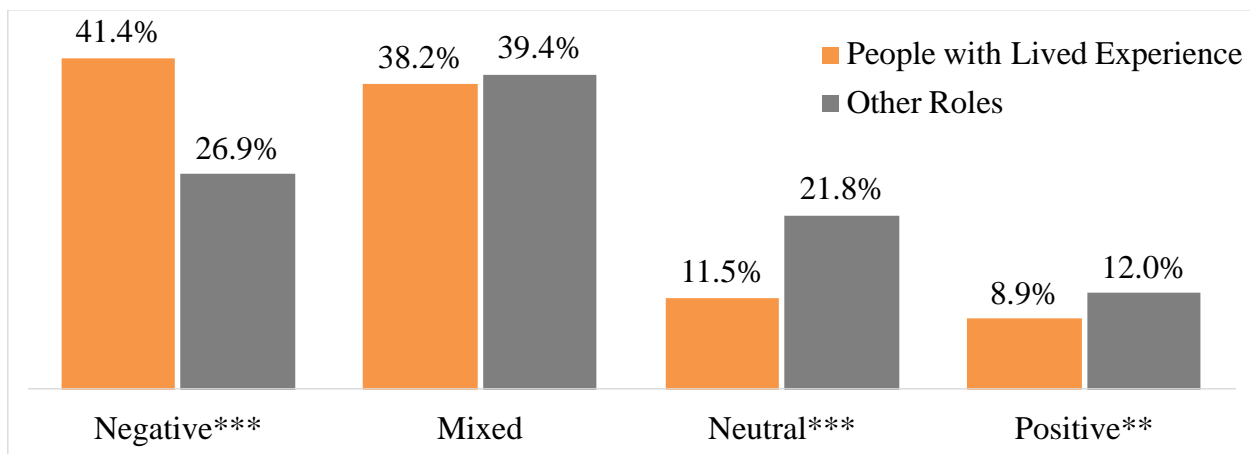


Fig. 5.1 The percentage of posts by People with Lived Experience and Other Roles for each *Sentiment* code. In aggregate, posts by People with Lived Experience tended to be associated with more negative *Sentiment* than posts by Other Roles

* = $p < .05$; ** = $p < .01$; *** = $p < .001$

Next consider the *Speech Acts* analytical concept. A larger percentage (Odds Ratio = 1.6; $p < .001$) of posts by People with Lived Experience contain Disclosure while a smaller percentage (Odds Ratio = 0.7; $p < .001$) contain Acknowledgement. The *Speech Act* codes of Emotional Expression (Odds Ratio = 1.0, $p = 1$), Question (Odds Ratio = 1.0; $p = 1$), Informational Support (Odds Ratio = 0.9; $p = 1$), Recommendation (Odds Ratio = 0.8; $p = 1$), and Other Speech Act (Odds Ratio = 0.8; $p = 1$) are all fairly similar in terms of percentage of posts by People with Lived Experience as compared with those by Other Roles. The breakdown of *Speech Acts* code frequencies by *Role* is shown in Figure 5.2.

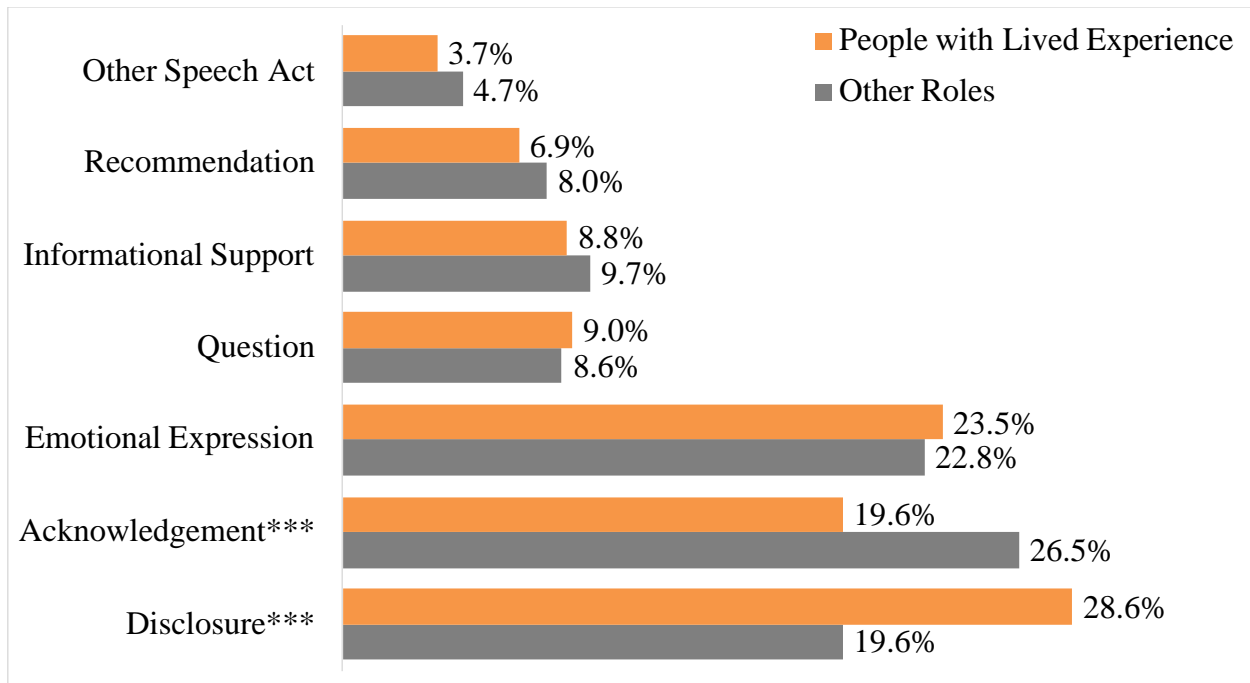


Fig. 5.2 The percentage of posts by People with Lived Experience and Other Roles for each *Speech Act*. In aggregate, posts by People with Lived Experience tended to be associated with more Disclosure while Other Roles tend to have more posts with Acknowledgement

* = $p < .05$; ** = $p < .01$; *** = $p < .001$

5.3.2 Courtney's Domains for posts by People with Lived Experience

In the second analysis, only posts by People with Lived Experience were included. Code frequencies were compared for the *Sentiment* and *Speech Acts* analytical concepts between posts with at least one of *Courtney's Domains* and posts without any of *Courtney's Domains*. First consider the *Sentiment* analytical concept. Negative (Odds Ratio = 4.2; $p < .001$) is the only *Sentiment* with a higher percentage of posts containing at least one of *Courtney's Domains* compared to posts without any of *Courtney's Domains*. Alternatively, both Positive (Odds Ratio = 0.3; $p < .001$) and Mixed (Odds Ratio = 0.5; $p < .001$) feelings showed up in lower percentages of posts that had at least one compared to without any of *Courtney's Domains*. The rate of Neutral posts was even (Odds Ratio = 1.0; $p = 1$) between posts with or without *Courtney's Domains*. The breakdown of *Sentiment* code frequencies by inclusion of at least one or exclusion of all of the codes in *Courtney's Domains* is shown in Figure 5.3.

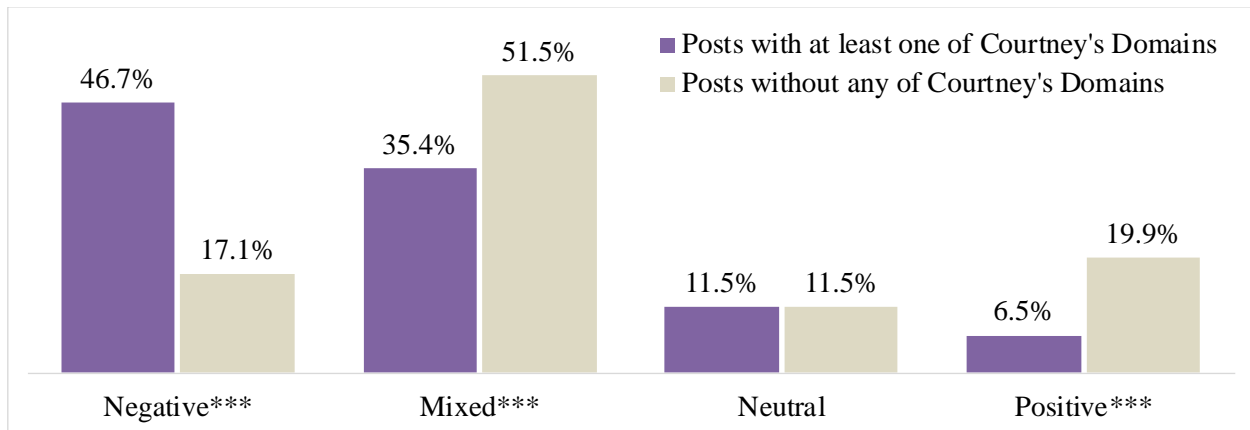


Fig. 5.3 Within posts by People with Lived Experience, this compares the percent that contain at least one of *Courtney's Domains* and the percent that do not contain any of *Courtney's Domains* for each *Sentiment* code. In aggregate, posts by People with Lived Experience that discuss at least one of *Courtney's Domains* tended to be associated with more Negative and less Positive and Mixed *Sentiment*

* = $p < .05$; ** = $p < .01$; *** = $p < .001$

Each of the eight codes in *Courtney's Domains* can also be considered individually. Each individual code has a higher percentage of negative feelings than the aggregate of posts without any of *Courtney's Domains* (17.1% Negative), but noting that there is a range from Criminal Justice System Involvement (54.6% Negative) to Employment and Economic Self-Sufficiency (27.0% Negative). The breakdown of Negative *Sentiment* code frequencies for each code of *Courtney's Domains* is shown in Figure 5.4.

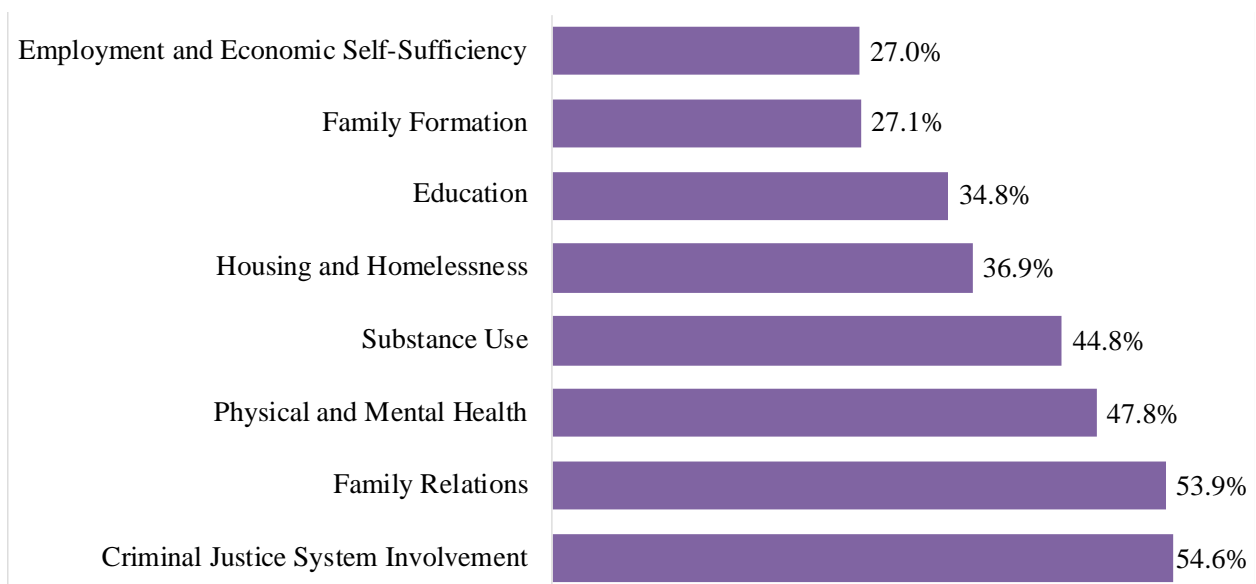


Fig. 5.4 Within posts by People with Lived Experience, this shows the percentage that contain the Negative *Sentiment* code for each of *Courtney's Domains*

Next consider the *Speech Acts* analytical concept. The *Speech Acts* with higher percentages of posts that contain at least one of *Courtney's Domains* compared to posts without any of *Courtney's Domains* include Disclosure (Odds Ratio = 2.0; $p < .001$) and Recommendation (Odds Ratio = 1.5; $p = 0.63$). Alternatively, Acknowledgement (Odds Ratio = 0.5; $p < .001$) and Other Speech Act (Odds Ratio = 0.7; $p = 0.81$) were seen in lower percentages for posts with at least one compared to without any of *Courtney's Domains*. Similar percentages of posts with at least one compared to without any of *Courtney's Domains* contained Informational Support (Odds Ratio = 1.3; $p = 1$), Questions (Odds Ratio = 1.0; $p = 1$) and Emotional Expressions (Odds Ratio = 0.9; $p = 1$). The breakdown of *Speech Acts* code frequencies by inclusion of at least one or exclusion of all of *Courtney's Domains* codes is shown in Figure 5.5.

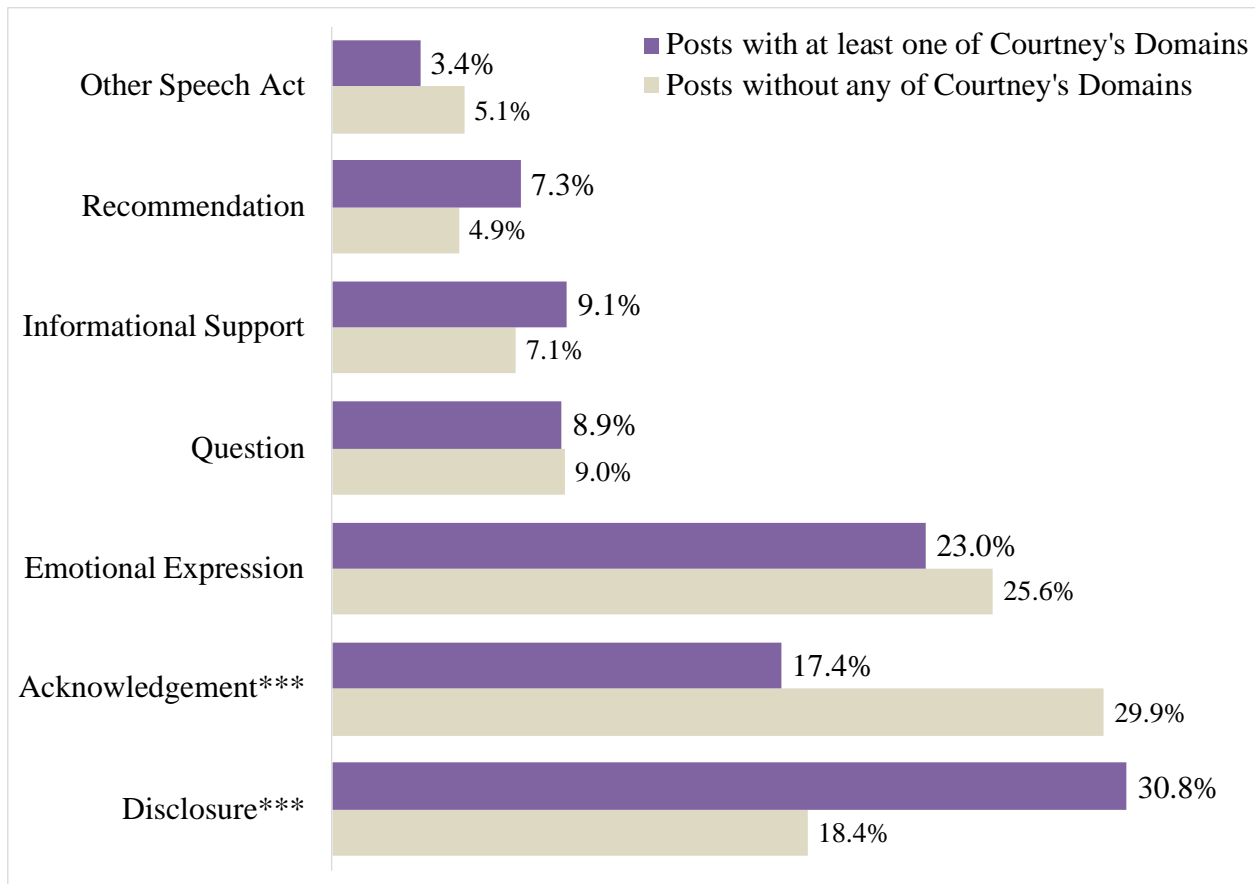


Fig. 5.5 Within posts by People with Lived Experience, this compares the percent that contain at least one of *Courtney's Domains* and the percent that do not contain any of *Courtney's Domains* for each *Speech Acts* code. In aggregate, posts by People with Lived Experience that discuss at least one of *Courtney's Domains* tended to be associated in particular with more Disclosure while posts by People with Lived Experience without discussion of any of *Courtney's Domains* were more likely to contain Acknowledgement

* = $p < .05$; ** = $p < .01$; *** = $p < .001$

5.3.3 Domains that Benefit from Online Discussion for posts by People with Lived Experience

In the third analysis, the starting point was to theoretically derive a new analytical concept, which will be called *Domains that Benefit from Online Discussion*. This new analytical concept was

derived from two previously described analytical concepts: *Growth Domains* and *Sage & Jackson's Benefits of Use*. The codes of *Domains that Benefit from Online Discussion* were derived from any code of *Growth Domains* that could theoretically be linked to *Sage & Jackson's Benefits of Use*. The full descriptions of each domain included in *Domains that Benefit from Online Discussion* can be found in Appendix A.

The Life Skills domain is associated with the Information and Resources benefit because it is related to gaining information on practical considerations and nuances of obtaining resources. The Foster Relations, Other Relations, Internet, and Holidays domains are associated with the Building Social Capital benefit because they relate to a desire to form relationships with other people, a mechanism for meeting people, and a time of year where building a strong social network can be important. The Internet domain also is associated with the Maintaining Connections benefit because it can be a means of staying connected to people who may not be located in the same physical space. The Holidays domain is also associated with the For Recreation, Relaxation, and Self-Soothing benefit due to interest in navigating that time of year in relaxed and healthy ways. The Recreation domain is associated with the For Recreation, Relaxation, and Self-Soothing benefit and the Identity Factors domain is associated with Identity Formation and Exploration for self-evident reasons. Finally, the Representation in Media domain is associated with the Empowered Voice and Independence benefit because ways that foster youth and the foster care system are depicted in media can have a strong impact on how people with lived experience are able to feel empowered in society. See Table 5.2 for the full enumeration of the domain codes that fit this new analytical concept along with the benefits determined to be associated with each one.

Table 5.2 *Domains that Benefit from Online Discussion* as a mapping from *Growth Domains* to *Sage & Jackson's Benefits of Use*. This contains each code of the *Domains that Benefit from Online Discussion* analytical concept in the left column. These codes are derived from the *Growth Domains* analytical concept. In the right column are the benefits from *Sage & Jackson's Benefits of Use* associated with those domains.

<i>Domains that Benefit from Online Discussion</i>	<i>Sage & Jackson's Benefits of Use</i>
Life Skills	Information and Resources
Internet	Maintaining Connections; Building Social Capital
Foster Relations	Building Social Capital
Other Relations	Building Social Capital
Holidays	Building Social Capital; For Recreation, Relaxation, and Self-Soothing
Recreation	For Recreation, Relaxation, and Self-Soothing
Identity Factors	Identity Formation and Exploration
Representation in Media	Empowered Voice and Independence

Then, posts exclusively by People with Lived Experience were analyzed in terms of this new analytical concept. Code frequencies were compared for the *Sentiment* and *Speech Acts* analytical concepts for posts with at least one of the codes from *Domains that Benefit from Online Discussion* and posts without any of the codes from *Domains that Benefit from Online Discussion*. First consider the *Sentiment* analytical concept. Positive (Odds Ratio = 3.1; $p < .001$) and Neutral (Odds Ratio = 1.7; $p < .001$) are the feelings with a higher percentage of posts containing at least one of the *Domains that Benefit from Online Discussion* compared to posts without any of the *Domains that Benefit from Online Discussion*. Alternatively, Negative (Odds Ratio = 0.6; $p < .001$) feelings showed up in lower percentages of posts with at least one compared to without any of the *Domains that Benefit from Online Discussion*. The rate of Mixed posts was nearly even (Odds Ratio = 0.9; $p = 1$) between posts with or without *Domains that Benefit from Online Discussion*. The breakdown of *Sentiment* code frequencies by inclusion of at least one or exclusion of all of the *Domains that Benefit from Online Discussion* codes is shown in Figure 5.6.

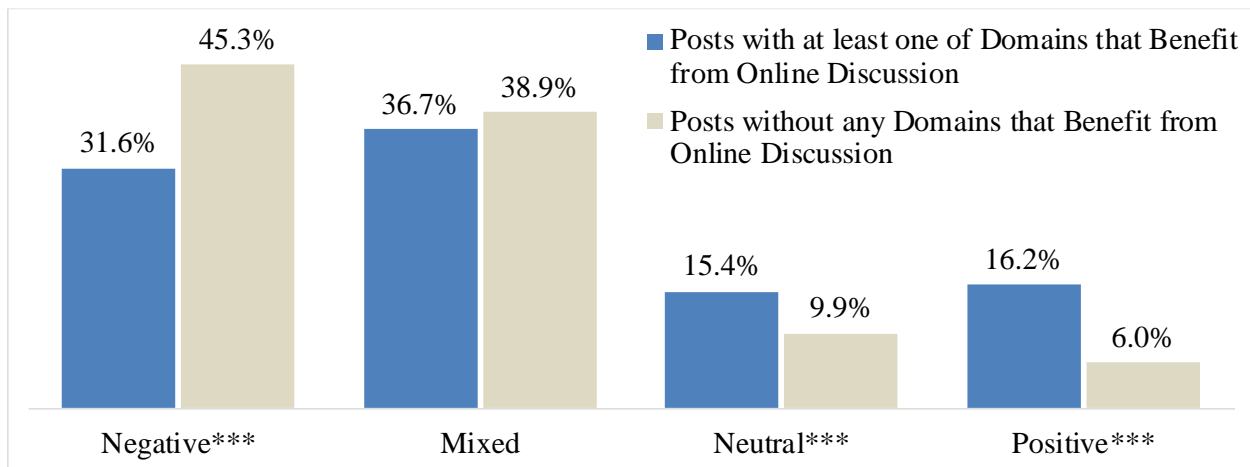


Fig. 5.6 Within posts by People with Lived Experience, this compares the percent that contain at least one of *Domains that Benefit from Online Discussion* and the percent that do not contain any of *Domains that Benefit from Online Discussion* for each *Sentiment* code. In aggregate, posts by People with Lived Experience that discuss at least one of *Domains that Benefit from Online Discussion* tended to be associated with more Positive and Neutral and less Negative *Sentiment* * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Each of the eight codes in *Domains that Benefit from Online Discussion* can also be considered individually. A wide range of different percentages of *Sentiment* codes can be observed. The Identity Factors (52.0%) code was discussed with primarily Negative *Sentiment*. Alternatively, the Recreation (53.8%) and Representation in Media (35.8%) had larger percentages of the Positive feelings than the other *Sentiments*. The remaining domains were primarily Mixed, including Other Relations (47.2%), Holidays (39.4%), Foster Relations (37.5%), Internet (34.7%), and Life Skills (34.6%). See Figure 5.7 for the full breakdown of *Sentiment* codes for each of the *Domains that Benefit from Online Discussion*.

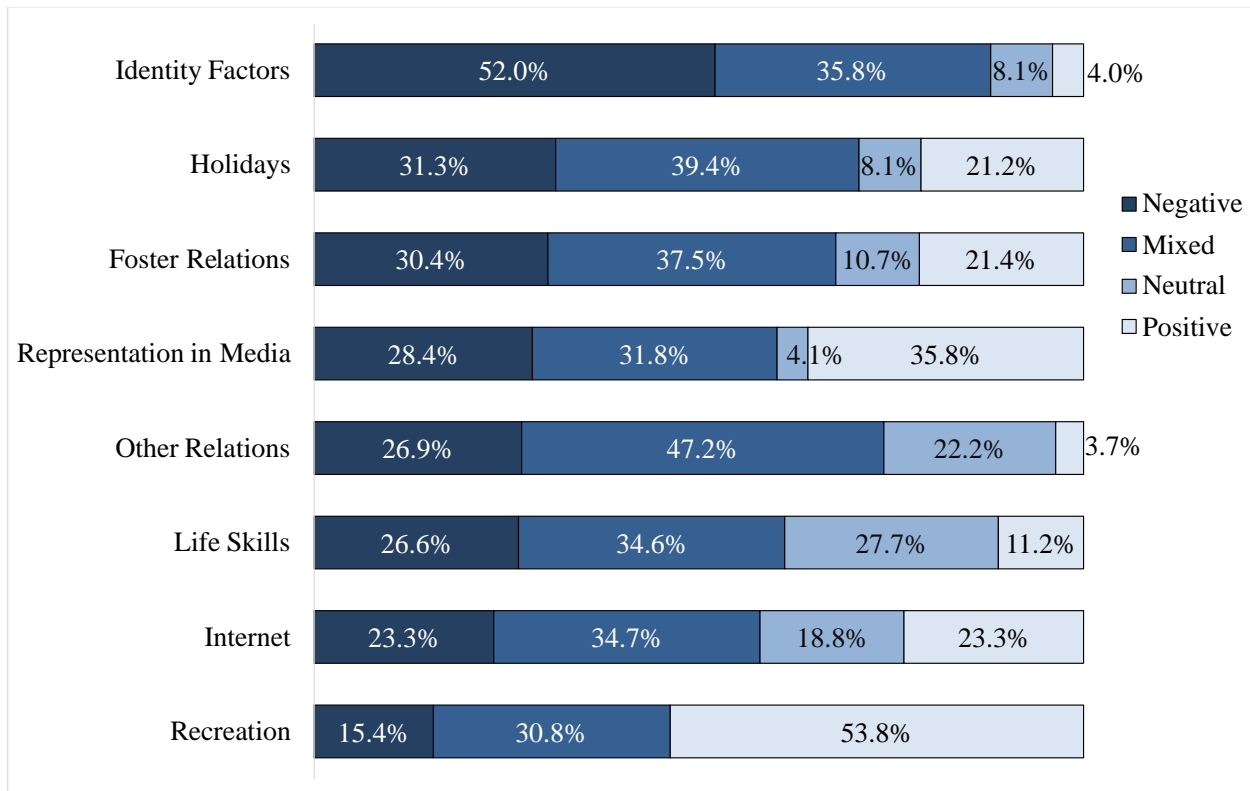


Fig. 5.7 Within posts by People with Lived Experience, this shows the distributions of *Sentiment* for each of the *Domains that Benefit from Online Discussion*

Next consider the *Speech Acts* analytical concept. Each of the *Speech Acts* – Recommendation (Odds Ratio = 1.3; $p = 1$), Informational Support (Odds Ratio = 1.2; $p = 1$), Question (Odds Ratio = 1.1; $p = 1$), Emotional Expression (Odds Ratio = 1.0; $p = 1$), Acknowledgement (Odds Ratio = 0.9; $p = 1$), Disclosure (Odds Ratio = 0.9; $p = 1$), and Other Speech Act (Odds Ratio = 0.9; $p = 1$) – had similar percentages of posts with at least one compared to without any of the *Domains that Benefit from Online Discussion*. The breakdown of *Speech Acts* code frequencies by inclusion at least one or exclusion of all of the *Domains that Benefit from Online Discussion* codes is shown in Figure 5.8.

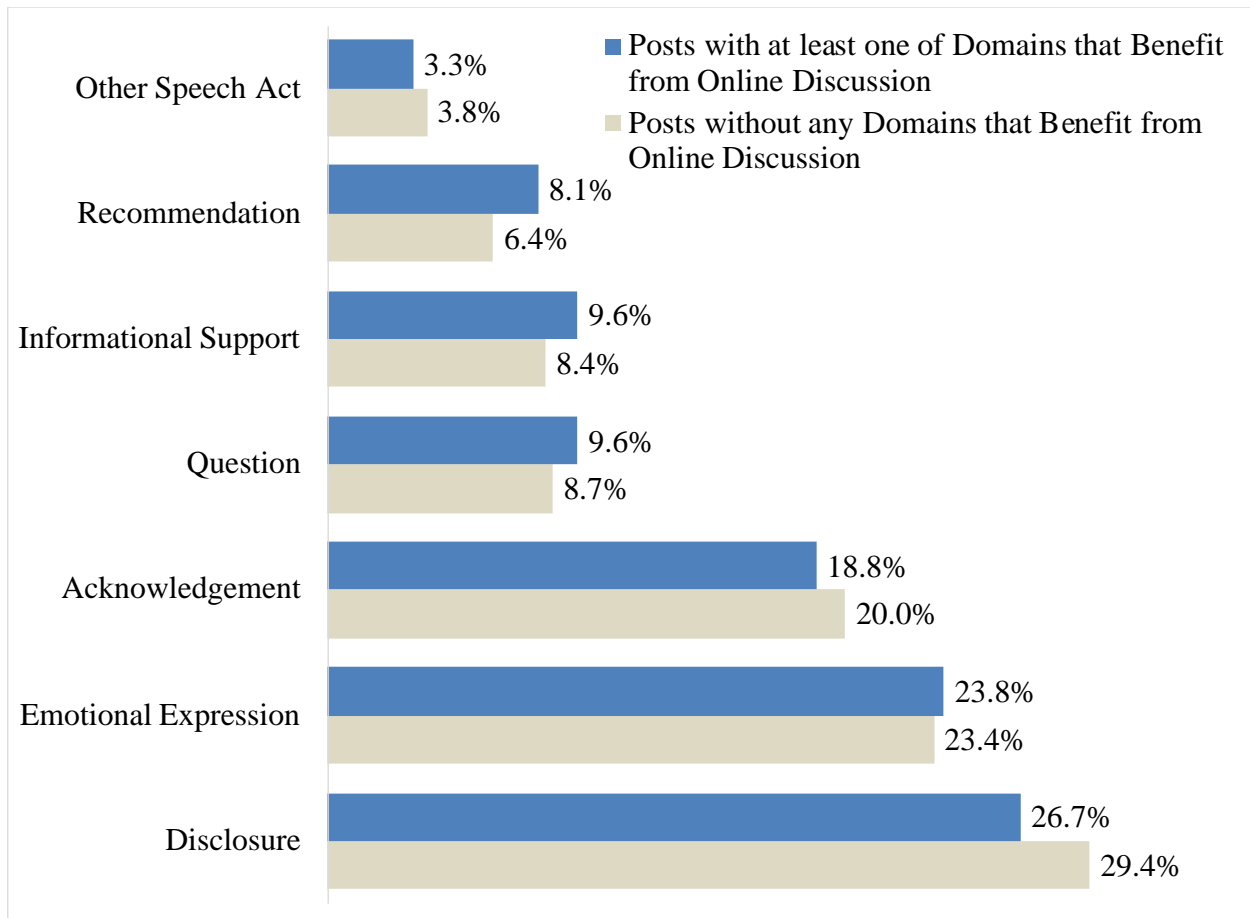


Fig. 5.8 Within posts by People with Lived Experience, this compares the percent that contain at least one of *Domains that Benefit from Online Discussion* and the percent that do not contain any of *Domains that Benefit from Online Discussion* for each *Speech Act* code. In aggregate, there were no significant differences in the types of *Speech Acts* included in posts by People with Lived Experience with or without at least one of the *Domains that Benefit from Online Discussion*
 * = $p < .05$; ** = $p < .01$; *** = $p < .001$

5.4 Discussion

5.4.1 Role Comparison

The *Role* comparison analysis provides evidence that people who have spent time in the foster care system tend to feel differently about topics of discussion relevant to their lived experience than those who have not spent time in the system. The People with Lived Experience in this online community discussed topics with more *Negative Sentiment* on average than Other Roles. This reiterates the importance of including the voices of those with lived experience in the research and policy processes, as understandings of topics important to their lives are likely to be different than for those who have not spent time in the system and the lives being affected by the system are their own (Nybell, 2013). The directionality of the observed difference is also of note as it provides evidence that the direct impact of the system results in greater difficulties for those with lived experience than others are currently able to understand.

The *Role* comparison analysis also indicates differences in how people with or without lived experience are using the online space itself. The results indicate that over the period of data collection, this was largely a space for People with Lived Experience to center issues important to them. This can be observed in the higher rate of Disclosure from People with Lived Experience paired with the higher rate of Acknowledgement from Other Roles. This provides evidence that people with lived experience were using this space to share information personal to their own stories while those who had not spent time in the system were often speaking in ways that might validate or demonstrate that they were listening to these thoughts. Use of an online community in this way can provide individuals an opportunity to share parts of their story and be heard.

5.4.2 Courtney's Domains for posts by People with Lived Experience

The analysis of *Courtney's Domains* for posts exclusively by People with Lived Experience provides evidence that this set of topics is an important set of risk and protective factors for people with lived experience. People with foster care experience discussed these topics more negatively than other topics. In particular, risk factors discussed in domains like Criminal Justice System Involvement, Family Relations, Physical and Mental Health, and Substance Use were all discussed with rates of Negative *Sentiment* of at least 44%. It is a strong indication of the difficulty associated with these domains that roughly half of the posts related to each one contains exclusively negative feelings. With lower rates of Negative *Sentiment* (roughly 30%), protective factors like Employment and Economic Self-Sufficiency, Family Formation, Education, and Housing and Homelessness show evidence of being areas that have a greater potential for setting individuals up for success. While these protective factors have lower rates of negative feelings than the risk factors, the absolute rate is still fairly high, indicating that people with lived experience in this community still have many frustrations with these factors, and can reiterate the existence of strong barriers to access (Ahrens et al., 2011; Day et al., 2011; Dworsky et al., 2012; Hook & Courtney, 2011).

Along with the high rates of Negative *Sentiment* related to these topics, it is also noteworthy that these topics are associated with a disproportionate rate of disclosure. This combination aligns with previous research, as online pseudonymity is known to have a disinhibiting effect for disclosing sensitive personal information (Phillips, 2002; Ammari et al., 2018). When anonymity is ensured, it can provide a benefit for working through difficult situations and discussing difficult experiences. However, it can also provide great risk in cases when individual identities become exposed (Badillo-Urquiola et al., 2017).

5.4.3 Domains that Benefit from Online Discussion for posts by People with Lived Experience

While the risks and protective factors associated with *Courtney's Domains* are one area of importance to people with lived experience in this online community, a qualitatively distinct set of concerns was also present from the set of *Growth Domains*. Both sets of topics were discussed by people with lived experience in the online community, but often in very different ways.

In the analysis of the *Domains that Benefit from Online Discussion*, overall these domains tended to be discussed with higher rates of Positive *Sentiment* than those posts without any of these domains. As a result, these domains were observed to often contain a wider range of feelings from people with lived experience (see Figure 5.7). One thing that this provides evidence for is that there exists a wide diversity of opinions and feelings from people who have spent time in the foster

care system on topics that are not as straightforward as whether they should have equitable access to things like housing, education, and employment. This can also be seen through the types of observed *Speech Acts* for these domains, as there is again a wider range of expression, rather than the strong trend toward Disclosure seen with *Courtney's Domains*. The online community's diversity of thought and expression on these topics is an indication that it provides people with lived experience a place to not only engage with people who might have relatable life experiences but also to express a fuller and more complex version of who they are beyond their basic needs.

While many of these domains exhibit a wide range of feelings, some tend to cluster on certain ends of the *Sentiment* spectrum. For example, more than 50% of the posts discussing Recreation were Positive. This is important to note, as it indicates that one way people with lived experience were using the online space was lighthearted in nature and primarily related to sharing activities that people like to do for fun. Alternatively, more than 50% of the posts discussing Identity Factors were Negative. This indicates that people with lived experience are also using the space for serious conversations that have increasingly gained a foothold in both child welfare and society as a whole. The wide variety of topics, sentiments, and types of speech acts demonstrates the significant depth and breadth of conversation that a large group of individuals might engage in over time in an online community.

5.4.4 Policy Implications

The complexity and fullness of expression observed in an online community like r/Ex_Foster has strong implications for policy. First, the seriousness and sensitivity of many disclosures made by people who have spent time in the foster care system as evidenced in this online community indicates the importance of producing some policy and guidelines related to online engagement of people with lived experience. The frequent disclosure of negative feelings related to risks and protective factors for people who have spent time in the foster care system provides evidence that these spaces are used by some to work through difficult, personal experiences. Additionally, the more diverse and varied discussion related to other topics indicates the beneficial use of online community technology for people to express themselves and work through a variety of concepts beyond just managing basic needs. There is too much at stake to permit the current situation in which caregivers, social workers, and social media companies (i.e., host sites) are each at their own discretion to either expose people with lived experience to the risks of unsafe use or deny them benefits of safe use of online community technology.

Rather than formalizing the current all-or-nothing approach to online community use, policies should instead focus on identifying, preventing, and responding to risk. A few areas of serious risk to consider include understanding signs of mental health needs that require urgent support, reliability of legal advice provided on the platform, prevention of human trafficking, and protection of individual privacy. For these areas of serious risk, policymakers should consider requiring host sites to provide formal support in addition to the informal peer support (e.g., community moderators) that is often already being provided. An example of this might be to require host sites to monitor discussion for signs of distress and extend mental health and other trauma-informed resources to individuals who may need additional support. Host sites might also be required to provide attorneys who can monitor discussion boards to answer legal or system-related questions for people with lived experience. Privacy concerns are another area that policymakers should address. An example could be requiring host sites to monitor and report to legal authorities any

child safety concerns to prevent dangers like sex trafficking recruitment. Host sites could also be required to make users aware of ways that anonymity might be compromised before posting in such a community and how they might improve the security of their account. Partnership with advocacy organizations (such as the American Civil Liberties Union (ACLU)) might also be recommended and/or required related to these policies for host sites to support and/or provide oversight of policy implementation.

Beyond the role of host sites, social workers and caregivers should be informed through formal training programs of the specific benefits and risks of engaging in online communities and other technology use. Trainings might include the risks and benefits of online engagement, how to maintain individual privacy and security online, and how and when to seek help from others if online engagement goes awry. These trainings should be co-designed with both technologists and people with lived experience. One important aspect of these trainings should be an emphasis on the participation and agency of people with lived experience in their own online engagement. Trainings should focus on how to support young people in use of social media and online communities that meets their goals in a safe and effective way. One example of a philosophy that adults can help children implement to take control of their own digital lives is *digital minimalism*, which advocates for purposefully selecting which digital tools one uses and carefully crafting how one uses them. Newport (2019) outlines a process for becoming a digital minimalist that could be taught as one part of a training to social workers and caregivers, who might work with young people help ensure that they are active participants in their own digital lives.

Another important implication of these findings for policymakers is the idea that people with lived experience clearly have a unique perspective on issues of importance to themselves as compared to people without system experience and also amongst one another on many issues. As a result of this finding, it should be a priority to involve not just one, but many people with lived experience in the design process for both policy development and caregiver and social worker trainings on this topic. People with lived experience are already carving out roles as leaders, peer mentors, advocates, and activists related to issues with the foster care system. For those of us without lived experience, we should provide many opportunities for many different voices of people with lived experience to be heard if we wish to aid these ongoing efforts. Part of this includes creatively finding ways to make it easy for people with lived experience to provide feedback to policymakers. This is vital in order to ensure that a variety of lived experience perspectives are heard in addition to the invaluable voices of the lived experience leaders and advocates who are already actively engaged. Once collected, this type of lived experience data should be prioritized in both policy and research. For example, further exploration of the aggregated lived experience data included in this analysis can be accessed through the following link of an interactive and customizable data visualization tool: <https://uw-hcde.shinyapps.io/FosterCommViz>.

5.4.5 Strengths and Limitations

The key strengths and limitations of this research are related to the study design and data source. Observing naturalistic discussion in an emerging, public online community allows for a unique and practical perspective that can capture some of the many voices of people with lived experience without the researchers influencing the discussion. However, this comes with the limitation of not knowing exactly who our participants are and how representative this group is of the larger set of foster care alumni and transitioning youth. With this, we can make no claims of generalizability

of our findings while still noting that they do provide some initial evidence in an area with limited empirical research to date. Additionally, no one on the research team has lived experience in the foster care system. Though direction and feedback were kindly provided from a researcher with lived experience at multiple stages of the research process, additional insights would arise with a greater level of engagement from multiple perspectives of individuals with lived experience.

5.5 Conclusion

This chapter describes an empirical study of a naturally-occurring online community of people with lived experience in the foster care system. As a starting point to filling a gap in empirical knowledge identified by Sage & Jackson (2021), this research shows one example of complex, online engagement by a group of people with foster care lived experience. The research explores how the benefits and risks identified in these findings might inform policymakers on guiding effective and safe online community use for this population. Future research can expand on these findings to refine more specific policy recommendations on foster youth engagement online.

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Ch 6: Online Community Research and Offline Policy Implications (RQ3)

Permanency in child welfare generally refers to the idea of long-lasting family connections and support for children and youth. This concept has long been one of the principal goals of the US child welfare system, but historically the focus has been primarily on legal permanency. Other types of permanency, including relational and cultural, have more recently gained attention, but have largely been left out of federal policy. This chapter provides a statistical analysis of what and how permanency-related terms are discussed in a set of posts from an online community of people with lived experience in foster care. The coding of permanency-related terms in posts was performed using natural language processing techniques. The results indicate that people with lived experience in foster care discussed topics of legal, relational, and cultural permanency more than others, with particular focus on aging out, religion, holidays, friends, being alone, and community. People with lived experience also discussed permanency-related topics in ways that particularly indicate help-seeking behavior compared both to other people and to their own discussions of non-permanency-related topics. Implications of these findings include the need to broaden understandings of permanency, policy recommendations that address issues in each of the areas of legal, relational, and cultural permanency, and recommendations for social work practice.

In this chapter, “we” refers to the research team of myself, Angelique Day, and Mark Zachry. Some previous qualitative coding work by David McDonald and members of the Spring 2020 DRG (see Acknowledgements) was also used in this chapter.

6.1 Introduction & Related Work

The concepts of permanency, child safety, child well-being, and family preservation have been the principal goals of the US child welfare system to various degrees over time (Fox et al., 2008). Historically, each of these concepts have taken on different degrees of emphasis at different moments (often at the expense of one another). This chapter in particular focuses on the concept of establishing permanency, as viewed through the lens of discussions in an online community of people with lived experience in the foster care system. Establishing permanency generally refers to the idea of ensuring long-lasting family situations and support for young people. Historically, much of the focus on permanency in the US has been on legal permanency – the concept of providing youth with permanent placement with caring adults, typically through legal reunification, adoption, or guardianship. While legal permanency is important, people with lived experience and some researchers have pointed to the importance of other forms of permanency for youth, including relational – relationships with relatives, parents, siblings, and other important people – and cultural (or physical) – connection with traditions, cultures, and daily customs (Burge, 2020). See Section 2.2 for additional background on the historical and theoretical development of permanency as a concept in child welfare.

A combination of legal, relational, and cultural connections is vital for a child to thrive and grow. Whether through reunification with a parent, or adoption or guardianship with another adult caregiver, legal connections have traditionally been the marker of who in a child’s life is eligible to receive services and benefits to support the child’s upbringing (Leticq et al., 2008). Without these sorts of legal connections, youth eventually “age out” of foster care and become responsible for their own transition to adulthood. For more information on this transition process, see Section 2.1. Relational connections to friends, family, mentors, and other members of the community can

help a young person to build out or maintain a robust social network on which they can rely for support (Berkman & Glass, 2000). Feelings of loneliness and distrust often develop without the presence of a robust relational network (Qualter et al., 2009; de Jong Gierveld et al., 2006). Connections to culture are also important for developing personal understandings of and coping with large social concepts like identity, religion, holidays, sexuality, gender, race, and ethnicity (Phinney, 2000). Whether through legal designations necessary to receive support, relational connections necessary to feel a sense of belonging to a social network or community, or cultural connections necessary to celebrate and make sense of one's identity in a social context, each of these three types of connections plays an important part in ensuring long-lasting family situations and support for young people. These connections can be overlapping (e.g., legal guardianship by a nearby grandparent who can help a young person remain in the same school and place of worship) or come together independently (e.g., transracial adoption in which the caregiver has received training and takes care to make space for the child's culture in their new home and ensures that the child can have regular visits with any neighboring relatives) (see Figure 6.1). While legal, relational, and cultural connections have long been understood to be important to a person's upbringing, the degree of emphasis that each concept has received in the child welfare space has changed over time.

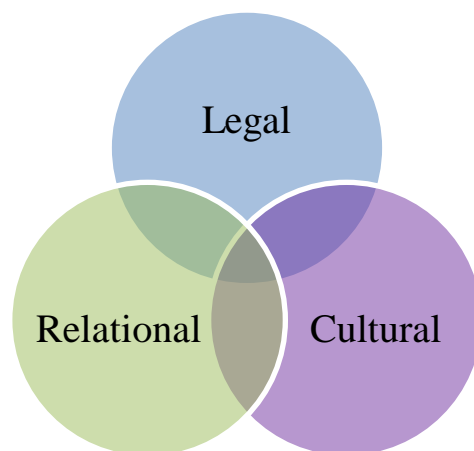


Fig. 6.1 Three types of permanency. This diagram shows how legal, relational, and cultural connections come together in both overlapping and non-overlapping ways to form the broader concept of permanency.

One way to track the ebb-and-flow of how permanency has been understood in child welfare is via the enactment of federal legislation. To do this, we will consider some of the most impactful permanency-related legislation from the past 30 years. The Multiethnic Placement Act (MEPA) of 1994 is an example of legislation that sought to impact topics related to permanency. The intention of MEPA was to decrease time-to-adoption after a parent's rights had been terminated. In its original form, it also included a provision championed by the Congressional Black Caucus (CBC) that permitted a child's cultural, ethnic, or racial background and the ability of a prospective foster or adoptive parent to meet any needs related to that background to be considered during the placement process (Wollen et al., 2023). This combination of provisions allowed the original form of MEPA to balance the priorities of legal and cultural permanency. However, MEPA was amended by the Interethnic Placement (IEP) Act in 1996, which mandated a color-blind approach to placing children, resulting in a repeal of the CBC's provision aimed at ensuring children cultural

continuity (McRoy et al., 2007). MEPA's attempt to balance legal and cultural permanency was short-lived, with the IEP amendment resulting in a strong prioritization for long-lasting legal connections.

While the child welfare system had previously made efforts (including MEPA and IEP) to reduce children's time in foster care and find permanent family connections, the first time that the concept of permanency was explicitly included in federal legislation was through the 1997 Adoption and Safe Families Act (ASFA) (Child Welfare Information Gateway, n.d.). ASFA strongly prioritized legal permanency and perceptions of child safety – which were especially racialized in the wake of the War on Drugs (Provine, 2011) – as it emphasized minimizing time in foster care through means like adoption if “reasonable efforts” at reunification have been made (Guggenheim, 2021). This priority for legal permanency means that a parent in the US can lose custody of a child if that parent is unable to achieve reunification from foster care within a 15-month period, regardless of the circumstances.

In more recent years, relational permanency has also gained a foothold in federal legislation. One example is the Fostering Connections to Success and Increasing Adoptions Act (FCA) enacted in 2008. Among the major provisions of the FCA were an extension of benefits and funds for kinship (i.e., relative) guardianships and adoptions. For example, states receiving Title IV-E funding were mandated to identify and notify within 30 days of removal from the home all adult relatives of a child of their option for the child to be placed with them, and to make “reasonable efforts” to place siblings together (Child Welfare Information Gateway, 2019). While still prioritizing legal connections through guardianship and adoption, the FCA's focus on increasing the number of kinship caregivers was a way of also prioritizing relational permanency, as children can maintain important connections to family social networks. Another example of this intention from the FCA was the authorization of voluntary grants for state, local, or Tribal child welfare agencies and private non-profit organizations to kinship navigator programs. Kinship navigator programs help relatives access benefits and services to support the children in their care. The first decade of the FCA's implementation showed an increase in the number of kinship caregivers due to the mandate to search for relatives, but states were less likely to implement non-mandated services like kinship navigator programs (Koh et al., 2021). The Family First Prevention Services Act (FFPSA) of 2018 aimed to change that by expanding opportunities for optional on-going funding of kinship navigator programs rated by the Title IV-E Prevention Services Clearinghouse (Child Welfare Information Gateway, 2019). While a promising way to support the expanding needs of the increasing number of kinship caregivers, the Clearinghouse requirement has been an impediment to implementation in the first five years after the passage of FFPSA (Kelly, 2023). As of January 2023, only two kinship navigator programs were rated such that states could implement the program and draw down funds, and neither of the programs was approved for supporting informal kinship caregiver. As most kinship arrangements are informal, this is a key oversight and an example of implementation issues causing continued prioritization of legal permanency.

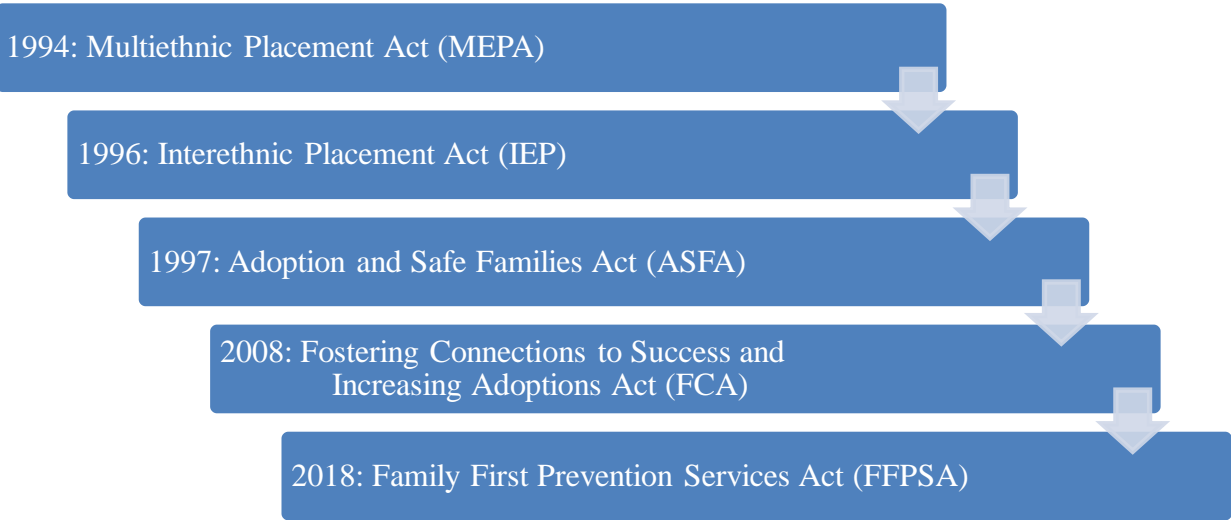


Fig. 6.2 Chronology of recent permanency-related US legislation. This diagram shows the year that each of the permanency-related acts that are highlighted in this chapter were passed into law.

While the legislative history of permanency tells one story of permanency’s place in the child welfare system (see Figure 6.2 for a chronology of this legislative history), feedback from people with lived experience can provide another – and perhaps serve as a guide for the next piece of permanency-related legislation. In recent years, several qualitative studies (e.g., de Finney & di Tomasso, 2015; Samuels, 2009; Salazar et al., 2018; Wilen, 2022) have sought to explore perceptions of people with lived experience of permanency and what it means to them. These studies provide valuable insights into the idea that permanency is a concept that extends beyond a legal connection to a caregiver to include more relational and cultural elements. The richness of permanency as a concept in these studies points to a need for researchers to more comprehensively investigate how people talk and feel about a variety of permanency-related topics. To the best of our knowledge, no study has endeavored to understand which forms of permanency are most relevant to people with lived experience and how each type of permanency might be relevant in similar or different ways, especially compared to the ways that people without foster care experience relate to these concepts.

As a start to fill this gap, this chapter focuses on an online community on the website Reddit that is centered on the experiences of people who have spent time in the foster care system. This is the same community as described in Chapters 4 and 5. The community is a public space focused on people with lived experience in foster care, and the discussion is naturally occurring and undirected. This means that people of various backgrounds can join and discuss concepts important and relevant to their own lives. Some of the people who post in this community – referred to as “People with Lived Experience” – indicated that they had lived experience in the foster care system, while others – referred to as “Other Roles” – did not indicate they had spent time in the system. People in Other Roles include child welfare professionals, current and prospective foster parents, relatives and friends of people with lived experience, and others who did not identify themselves publicly. Examining posts in this community based on the topics, sentiments, and types of speech acts used can allow us to get a sense of *which aspects* of the rather broad term of “permanency” are important to a group of people with lived experience in the foster care system,

along with *how* those aspects are discussed. To guide this exploration, we used the following set of research questions.

RQ 6.1: What permanency-related topics are most relevant to people with lived experience in foster care as compared to people without lived experience during online discussion?

RQ 6.2: When discussing permanency-related topics online, how do people with lived experience in foster care talk about those topics as compared to people without lived experience?

RQ 6.3: When people with lived experience have conversations online, how does discussion of permanency-related topics compare to discussion of topics not related to permanency?

To answer these questions, the remainder of the chapter is organized and motivated as follows. To begin, we describe the data, ethical considerations, and methods of our study to provide background on how the analysis was conducted. Next, we present our results and discussion, both of which are structured with sections corresponding to each of the three research questions. The discussion then has a section connecting these findings to implications for policy in each of the areas of legal, relational, and cultural permanency, and another section connecting findings to implications for social work practice. Finally, we describe several strengths and limitations of the study and conclude with recommendations for future work.

6.2 Methods

6.2.1 Data Collection

The dataset for this chapter consists of posts and associated metadata from the entire first year of the public online community *r/Ex_Foster* on Reddit. A network of thousands of online communities known as subreddits, Reddit is a website where registered members can connect and discuss a wide variety of topics. The same dataset and collection efforts relevant to this chapter are described in the studies outlined in Chapters 4 and 5 (also in: Fowler et al., 2022). The data spans one year, from the online community's inception on March 21, 2019 through March 22, 2020. Over that time 2,486 public posts were made in the community in 194 different threads of discussion. The total number of individuals who posted was 368 while the total number of members in the community reached 1,681 by the end of data collection. As of January 21, 2022, the number of members has grown to 3,300 individuals. Of the 2,486 posts from the first year of the community, we exclude 44 posts that contain no text and 53 posts that refer to a specific set of introductory questions. We exclude the posts related to the set of introductory questions because of our interest in naturalistic discussion, rather than communication that is structured and directed in this way. This means that our final dataset includes 2,389 posts.

Data was collected from this particular online community due to its explicitly stated (1) centering of a diversity of voices from those with lived experience and (2) openness to outsiders who are willing to respect those perspectives at the time of data collection. See Sections 4.2.1 and 5.2.1 for more information related to the data collection process and why this community was a good fit for our research.

6.2.2 Ethical Considerations

The community's centering of foster care experiences and openness to outsiders was a good fit for the authors of this chapter, as two of the authors (including myself) do not have lived experience in foster care while one of the authors does have lived experience in foster care. In addition, the

Institutional Review Board at our university determined in December 2019 that the public availability of the data meant that it did not need to be reviewed as human research under federal guidelines. Despite these indicators of the data being a good fit for our research purposes, we still took great care to develop and communicate our findings safely and ethically. In particular, we chose to protect individual privacy and pseudonymity by not quoting members of the community, keeping our analysis at a group level, removing deleted posts from the dataset, and not sharing or publicly archiving the dataset. Additionally, the author with lived experience in foster care was especially involved in the development of the list of permanency-related topics and interpretation of the findings in part to guide the work and reduce opportunities for unintentional harms. Understanding researcher positionality in this way is an important step in acknowledging and addressing how our personal positions have the potential to influence the research (Manohar et al., 2017). See Section 3.3.1 for more discussion of ethical considerations taken with this work.

6.2.3 *Previously Coded Analytical Concepts*

Three analytical concepts (i.e., *Role*, *Sentiment*, and *Speech Acts*) previously derived by a team of qualitative coders are associated with each post described in this chapter. *Role* describes if the poster has indicated that they have lived experience in the foster care system. Possible responses for *Role* include one of People with Lived Experience or Other Roles. *Sentiment* describes the feeling of the poster regarding any topics being discussed in the post. Possible responses for *Sentiment* include one of Negative, Mixed, Neutral, or Positive. *Speech Acts* describes the type(s) of communication included in a post. Possible responses for *Speech Acts* considered in the analysis for this chapter include one or more of Question, Recommendation, Disclosure, Acknowledgement, Emotional Expression, or Informational Support.

The qualitative coding processes for these analytical concepts involved a team of researchers reading each post and coming to agreement on each one's applicable codes. More details related to the qualitative coding process for *Role* can be found in Section 4.2.3 and more details for the *Sentiment* and *Speech Acts* qualitative coding processes can be found in Section 5.2.3.

6.2.4 *Natural Language Processing of Permanency-Related Terms*

A fourth analytical concept, *Permanency-Related Terms*, was newly derived for this chapter. The set of *Permanency-Related Terms* includes 20 terms divided into three groups by the type of permanency that each term represents. There are five terms related to legal permanency, including "legal," "adopt," "reunify," "guardian," and "age out." There are seven terms related to cultural permanency, including "cultural," "identity," "religion," "holidays," "race/ethnicity," "sexuality," and "gender." There are seven terms related to relational permanency, including "relational," "connection," "friend," "trust," "alone," "mentor," and "community." Finally, the term "permanency" itself was also included as a broad term potentially related to any type of permanency. Each one of these 20 terms was derived from two or more sub-terms that were standardized using a process called lemmatization (see the next paragraph for more details on this process). A summary of the set of *Permanency-Related Terms* accompanied by the type of permanency that each term represents and the lemmatized sub-terms that form each term can be found in Table 6.1.

The sub-terms that form each of the 20 terms are all words or short phrases that have been standardized using a process called *lemmatization*. Lemmatization is a common text pre-

processing technique used in Natural Language Processing (NLP) to group words or phrases into standardized forms called lemmas in order to facilitate text mining and analytics (Schütze et al., 2008). Lemmas are essentially the dictionary form of a word, meaning that words are stripped of their inflectional endings. For example, “reunify” is the lemma for the words “reunify,” “reunifies,” “reunifying,” and “reunified,” so the lemmatized sub-term “reunify” in *Permanency-Related Terms* encompasses any of those inflections of the term. Then, along with the lemmatized sub-terms “reunification” and “reunite” (and each of the inflected versions of them), any derivation of these three lemmatized sub-terms come together to form the term “reunify” in the set of *Permanency-Related Terms*. In doing this, we can use this set of 20 terms to represent a much larger set of words with the same or very similar base meanings.

Table 6.1 Codebook for *Permanency-Related Terms* analytical concept. This shows the set of 20 terms in *Permanency-Related Terms* along with their lemmatized sub-terms and types of permanency that each term represents.

Permanency-Related Terms	Lemmatized Sub-Terms	Type of Permanency
Permanency	permanency, permanent, permanence	All
Legal	legal, law, lawyer, judge, court, GAL, CASA, TPR	Legal
Adopt	adopt, adoption	
Reunify	reunify, reunification, reunite	
Guardian	guardian, guardianship	
Age Out	age out, emancipate, emancipation	
Cultural	cultural, culture	Cultural
Identity	identity, identify	
Religion	religion, religious, church, Jewish, Christian, Muslim	
Holidays	holiday, Christmas, Thanksgiving	
Race/Ethnicity	race, racial, racially, racist, racism, ethnic, ethnicity, Black, White, Hispanic, Latino, Latina, Latinx, Mexican, Indian, Asian, Indigenous, American	
Sexuality	sexuality, sex, LGBT, lesbian, gay, bisexual, straight, queer	
Gender	gender, female, male, transgender	
Relational	relational, relation, relationship	Relational
Connection	connection, connect	
Friend	friend, friendship	
Trust	trust, trustworthy	
Alone	alone, lonely	
Mentor	mentor, mentorship, teacher, advice	
Community	community, group, belong	

For the purposes of this analysis, we used the analytical techniques of lemmatization and text search to code each post for instances of each term in the set of *Permanency-Related Terms*. To do this, we used the statistical language R and the packages “tm,” “corpus,” and “textstem” (Feinerer, 2008; Rinker, 2018). First, we pre-processed each of the 2,389 posts to ensure that differences in formatting do not get in the way of searching the text for words or phrases. This entailed transforming all of the text to lowercase, removing stop-words (common words like “a,” “the,” and “is” that are insignificant individually), removing punctuation, and stripping extra

whitespace. Then, we lemmatized each remaining word in each post. After pre-processing and lemmatizing each post, we searched each post to indicate instances of grams (i.e., single words) or bigrams (i.e., two adjacent words) that correspond to each lemmatized sub-term that form the terms in the set of *Permanency-Related Terms*. For each of the 20 terms, if there was at least one instance of an associated lemmatized sub-term being present in a post, then that post was coded “Yes” as being related to that term. Otherwise, that post was coded “No” as being unrelated to that term.

In addition to coding for the presence of each of the 20 terms in the set of *Permanency-Related Terms* in each post, there were also four related summary concepts that were coded as well. The first of these concepts was whether there was at least one permanency-related term present in a post. If a post contained at least one of the 20 terms, then it was coded as “Yes.” Otherwise, it was coded as “No.” The second of these concepts was whether there was at least one legal permanency-related term present in a post. If a post contained at least one of the five legal type of permanency terms (see Table 6.1), then it was coded as “Yes.” Otherwise, it was coded as “No.” The third of these concepts was whether there was at least one cultural permanency-related term present in a post. If a post contained at least one of the seven cultural type of permanency terms (see Table 6.1), then it was coded as “Yes.” Otherwise, it was coded as “No.” Finally, the fourth of these concepts was whether there was at least one relational permanency-related term present in a post. If a post contained at least one of the seven cultural type of permanency terms (see Table 6.1), then it was coded as “Yes.” Otherwise, it was coded as “No.” These four summaries are also included as part of the *Permanency-Related Terms* analytical concept.

6.2.5 Statistical and Descriptive Analyses

After coding the data for *Permanency-Related Terms* using this NLP process, we completed three statistical and descriptive analyses. For the first analysis, we wanted to better understand any differences in how frequently People with Lived Experience included topics related to permanency in the online community compared to Other Roles. To explore this, we ran descriptive statistics, logistic regressions, and calculated odds ratios to compare observed frequencies of *Permanency-Related Terms* based upon the *Role* of the poster. In addition, three chi-squared tests (with Bonferroni p-value corrections for multiple testing) were run to analyze relative frequencies of the three types of permanency within posts by People with Lived Experience.

For the second analysis, we began by narrowing down to focus only on posts that contained at least one term from the set of *Permanency-Related Terms*. We wanted to examine the ways that topics related to permanency were discussed by people depending on whether they had lived experience in the foster care system. To do this, we isolated the subset of all posts that had at least one term from the set of *Permanency-Related Terms*. On these posts, we ran descriptive statistics, logistic regressions, and calculated odds ratios to compare observed code frequencies for the *Sentiment* and *Speech Acts* analytical concepts based upon the *Role* of the poster.

For the third analysis, we began by narrowing down to focus only on posts with the *Role* of People with Lived Experience. We wanted to explore how people with lived experience in foster care discuss topics related to permanency in comparison to topics that are not related to permanency. To do this, we isolated the subset of all posts by People with Lived Experience. On these posts, we ran descriptive statistics, logistic regressions, and calculated odds ratios to compare observed code frequencies for the *Sentiment* and *Speech Acts* analytical concepts between posts that contain

at least one term from the set of *Permanency-Related Terms* and posts without any terms from the set of *Permanency-Related Terms*.

6.3 Results

6.3.1 Comparison of *Permanency-Related Term Frequencies in Posts by Role*

In the first analysis, code frequencies were compared for the *Permanency-Related Terms* analytical concept based upon the *Role* of the poster. Overall, posts by People with Lived Experience tended to contain permanency-related terms more often than posts by Other Roles. This is true across all permanency-related terms (Odds Ratio = 2.0; $p < .001$), terms related to legal permanency (Odds Ratio = 1.3; $p = .02$), terms related to cultural permanency (Odds Ratio = 1.7; $p < .001$), and terms related to relational permanency (Odds Ratio = 1.9; $p < .001$). For specific terms, statistically significant differences existed for the terms “age out” (Odds Ratio = 3.0; $p < .001$), “religion” (Odds Ratio = 2.2; $p = .005$), “holidays” (Odds Ratio = 2.3; $p = .003$), “friend” (Odds Ratio = 1.9; $p = .001$), “alone” (Odds Ratio = 2.2; $p = .003$), and “community” (Odds Ratio = 2.0; $p < .001$). Also of note is that “permanency” is among the least common terms, included in 1.4% of posts by People with Lived Experience and 0.6% by Other Roles. A summary of all these results can be found in Table 6.2 and a summary of the statistically significant results can be found in Figure 6.3.

This first analysis also included a brief within-group analysis of the observed frequencies of the three types of permanency in permanency-related posts by People with Lived Experience. Within the set of permanency-related posts by People with Lived Experience ($n = 636$), there are 279 (44%) that contain at least one legal permanency-related term, 179 (28%) that contain at least one cultural permanency-related term, and 411 (65%) that contain at least one relational permanency-related term. The results of three chi-squared tests indicated statistically significant differences in the observed frequencies of legal vs. relational permanency ($\chi^2(1, N = 636) = 77.9, p < .001$), legal vs. cultural permanency ($\chi^2(1, N = 636) = 23.1, p < .001$), and cultural vs. relational permanency ($\chi^2(1, N = 636) = 25.1, p < .001$). These results indicate that relational permanency was the most commonly discussed type of permanency by People with Lived Experience at a statistically significant level.

Table 6.2 Comparison of *Permanency-Related Terms* by *Role*. For each term in *Permanency-Related Terms*, we show numbers of posts by *Role* with statistical analyses of observed differences.

	People with Lived Experience		Other Roles		z	p	Odds Ratio [95% CI]
	n	%	n	%			
Total Posts	1227	-	1162	-	-	-	-
At least one permanency-related term	636	51.8	405	34.9	8.32	<.001***	2.0 [1.7, 2.4]
At least one legal permanency-related term	279	22.7	195	16.8	2.32	.02*	1.3 [1.0, 1.6]
At least one cultural permanency-related term	179	14.6	92	7.9	3.89	<.001***	1.7 [1.3, 2.3]
At least one relational permanency-related term	411	33.5	228	19.6	6.59	<.001***	1.9 [1.6, 2.3]
Permanency	17	1.4	7	0.6	1.86	.06	2.3

							[1.0, 6.0]
Legal	87	7.1	74	6.4	0.77	.44	1.1 [0.8, 1.1]
Adopt	121	9.9	110	9.5	0.11	.91	1.0 [0.8, 1.4]
Reunify	33	2.7	31	2.7	-0.71	.48	0.8 [0.5, 1.4]
Guardian	8	0.7	13	1.1	-1.44	.15	0.5 [0.2, 1.2]
Age Out	96	7.8	33	2.8	5.24	<.001***	3.0 [2.0, 4.5]
Cultural	21	1.7	7	0.6	1.96	0.05	2.4 [1.0, 6.2]
Identity	17	1.4	9	0.8	0.76	0.44	1.4 [0.6, 3.3]
Religion	52	4.2	20	1.7	2.83	.005**	2.2 [1.3, 3.8]
Holidays	47	3.8	18	1.5	3.02	.003**	2.3 [1.4, 4.2]
Race/Ethnicity	44	3.6	27	2.3	1.04	.30	1.3 [0.8, 2.2]
Sexuality	39	3.2	22	1.9	1.10	.27	1.4 [0.8, 2.4]
Gender	10	0.8	3	0.3	1.41	.16	2.6 [0.8, 11.7]
Relational	68	5.5	41	3.5	1.03	.30	1.2 [0.8, 1.9]
Connection	41	3.3	16	1.4	1.74	.08	1.7 [1.0, 3.2]
Friend	109	8.9	46	4.0	3.28	.001**	1.9 [1.3, 2.7]
Trust	40	3.3	19	1.6	1.80	.07	1.7 [1.0, 3.0]
Alone	65	5.3	22	1.9	2.98	.003**	2.2 [1.3, 3.6]
Mentor	78	6.4	52	4.5	0.70	.48	1.1 [0.8, 1.7]
Community	198	16.1	93	8.0	4.92	<.001***	2.0 [1.5, 2.6]

* = $p < .05$; ** = $p < .01$; *** = $p < .001$

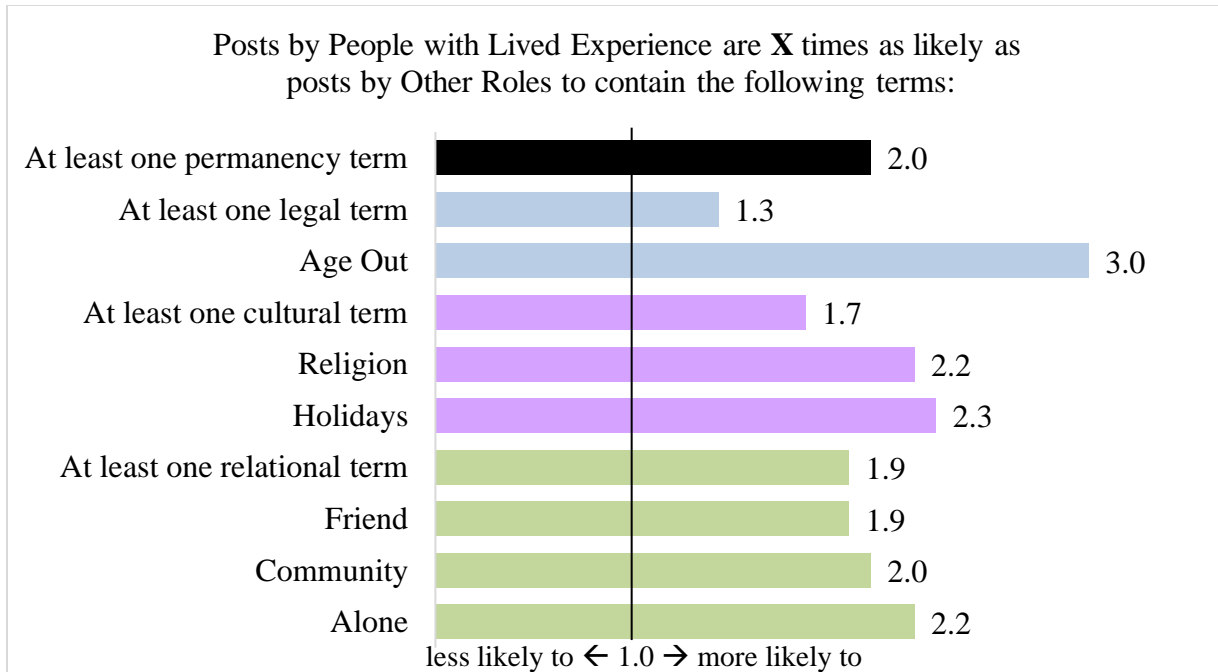


Fig. 6.3 Odds ratios for statistically significant results from comparison of *Permanency-Related Terms* by *Role*. For each statistically significant result, this shows the number of times as likely it is that the term was contained in a post by People with Lived Experience compared to Other Roles. Note that broad permanency terms are colored black, legal permanency terms are colored blue, cultural permanency terms are colored purple, and relational permanency terms are colored green.

6.3.2 Comparison of Sentiment and Speech Acts in Permanency-Related Posts by Role

In the second analysis, posts were filtered to only those that include at least one term from the set of *Permanency-Related Terms*. Then, code frequencies were compared for the *Sentiment* and *Speech Acts* analytical concepts based upon the *Role* of the poster (definitions for each type of *Sentiment* and *Speech Acts* can be found in Section 5.2.3). For *Sentiment*, permanency-related posts by People with Lived Experience tended to express more negative (Odds Ratio = 2.5; $p < .001$) and mixed (Odds Ratio = 2.6; $p < .001$) feelings than permanency-related posts by Other Roles. For *Speech Acts*, permanency-related posts by People with Lived Experience tended to include more disclosure (Odds Ratio = 3.4; $p < .001$) and emotional expression (Odds Ratio = 1.8; $p < .001$) than permanency-related posts by Other Roles. A summary of all the results can be found in Table 6.3 and a summary of the statistically significant results can be found in Figure 6.4.

Table 6.3 Comparison of *Sentiment* and *Speech Acts* in posts with *Permanency-Related Terms* by *Role*. For each post with at least one permanency-related term, this shows the frequency of posts with each type of *Sentiment* and *Speech Acts* by each *Role* along with a statistical analysis of any observed differences.

	People with Lived Experience		Other Roles		z	p	Odds Ratio [95% CI]
	n	%	n	%			
Total Posts	636	-	405	-	-	-	-
Neutral Sentiment	116	18.2	139	34.3	-1.44	.15	0.8

							[0.7, 1.1]
Negative Sentiment	276	43.4	134	33.1	5.51	<.001***	2.5 [1.8, 3.4]
Mixed Sentiment	203	31.9	92	22.7	5.47	<.001***	2.6 [1.9, 3.8]
Positive Sentiment	41	18.2	40	9.9	0.81	.42	1.2 [0.7, 2.0]
Question	154	24.2	99	24.4	-0.09	.93	1.0 [0.7, 1.3]
Recommendation	138	21.7	93	23.0	-0.48	.63	0.9 [0.7, 1.3]
Disclosure	496	78.0	207	51.1	8.85	<.001***	3.4 [2.6, 4.4]
Acknowledgement	285	44.8	203	50.1	-1.67	.09	0.8 [0.6, 1.0]
Emotional Expression	379	59.6	185	45.7	4.38	<.001***	1.8 [1.4, 2.3]
Informational Support	166	26.1	118	29.1	-1.07	.28	0.9 [0.7, 1.1]

* = $p < .05$; ** = $p < .01$; *** = $p < .001$

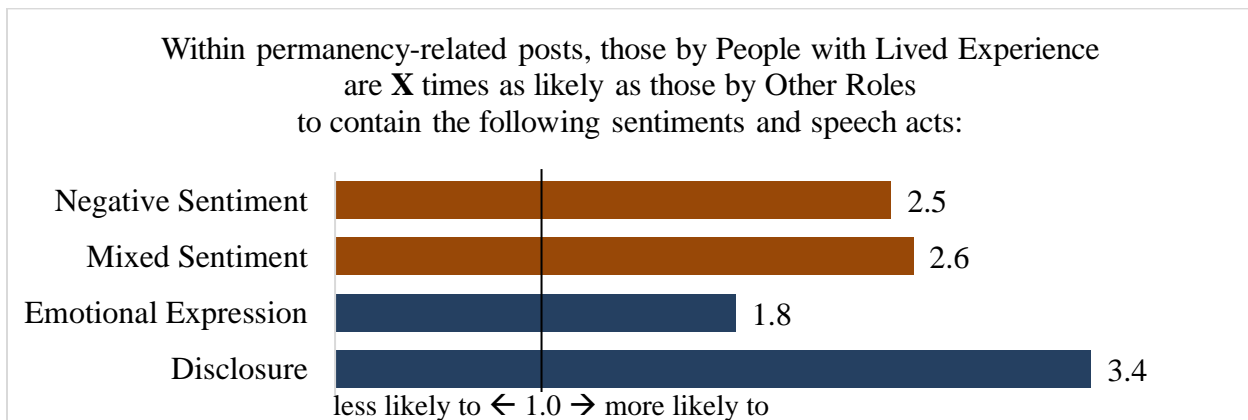


Fig. 6.4 Odds ratios for statistically significant results from comparison of *Sentiment* and *Speech Acts* in permanency-related posts by *Role*. For each statistically significant result, this shows the number of times as likely it is that the type of sentiment or speech act was contained in a permanency-related post by People with Lived Experience compared to Other Roles. Note that types of sentiment are colored orange and types of speech acts are colored dark blue.

6.3.3 For People with Lived Experience, Comparison of Sentiment and Speech Acts in Posts by Inclusion of Permanency-Related Terms

In the third analysis, posts were filtered to only those made by People with Lived Experience. Then, code frequencies were compared for the *Sentiment* and *Speech Acts* analytical concepts based upon whether the post contains at least one permanency-related term. For *Sentiment*, permanency-related posts by People with Lived Experience tended to include more negative (Odds Ratio = 1.9; $p < .001$) and mixed (Odds Ratio = 3.2; $p < .001$) feelings and fewer neutral (Odds Ratio = 0.6; $p < .001$) feelings than posts with no permanency-related terms by People with Lived

Experience. For *Speech Acts*, permanency-related posts by People with Lived Experience tended to include more questions (Odds Ratio = 1.3; $p = .04$), recommendation (Odds Ratio = 2.1; $p < .001$), disclosure (Odds Ratio = 2.3; $p < .001$), and informational support (Odds Ratio = 1.8; $p < .001$), and less acknowledgement (Odds Ratio = 0.8; $p = .02$) than posts with no permanency-related terms by People with Lived Experience. A summary of all the results can be found in Table 6.4 and a summary of the statistically significant results can be found in Figure 6.5.

Table 6.4 For People with Lived Experience, comparison of *Sentiment* and *Speech Acts* in posts by presence of *Permanency-Related Terms*. For each post by People with Lived Experience, this shows the frequency of posts with each type of *Sentiment* and *Speech Acts* by whether or not the post contains at least one permanency-related term along with a statistical analysis of any observed differences.

	Posts with at least one permanency-related term		Posts with no permanency-related terms		z	p	Odds Ratio [95% CI]
	n	%	n	%			
Total Posts	636	-	591	-	-	-	-
Neutral Sentiment	116	18.2	191	32.3	-4.24	<.001***	0.6 [0.5, 0.8]
Negative Sentiment	276	43.4	240	40.6	4.34	<.001***	1.9 [1.4, 2.5]
Mixed Sentiment	203	31.9	106	17.9	6.84	<.001***	3.2 [2.3, 4.4]
Positive Sentiment	41	18.2	54	9.1	0.94	.35	1.3 [0.8, 2.0]
Question	154	24.2	114	19.3	2.08	.04*	1.3 [1.0, 1.8]
Recommendation	138	21.7	68	11.5	4.71	<.001***	2.1 [1.6, 2.9]
Disclosure	496	78.0	361	61.1	6.38	<.001***	2.3 [1.8, 2.9]
Acknowledgement	285	44.8	303	51.3	-2.26	.02*	0.8 [0.6, 1.0]
Emotional Expression	379	59.6	324	54.8	1.69	.09	1.2 [1.0, 1.5]
Informational Support	166	26.1	96	16.2	4.18	<.001***	1.8 [1.4, 2.4]

* = $p < .05$; ** = $p < .01$; *** = $p < .001$

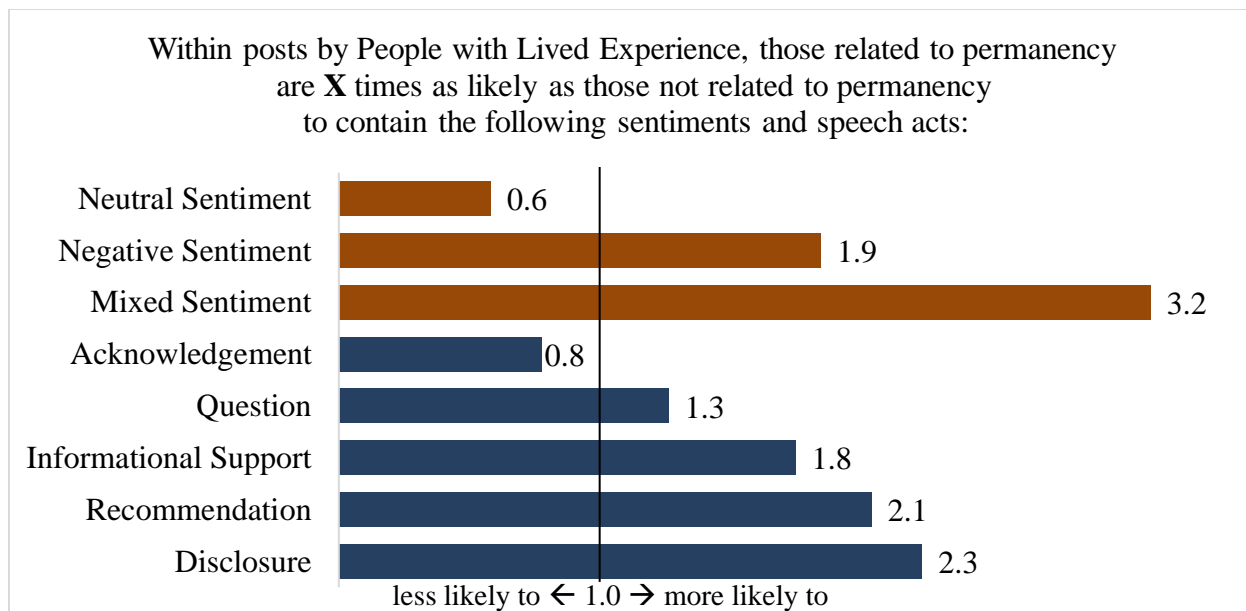


Fig. 6.5 Odds ratios for statistically significant results from comparison of *Sentiment* and *Speech Acts* in posts by People with Lived Experience by whether they contain *Permanency-Related Terms*. For each statistically significant result, this shows the number of times as likely it is that the type of sentiment or speech act was contained in a permanency-related post compared to a post without any permanency-related terms by People with Lived Experience. Note that types of sentiment are colored orange and types of speech acts are colored dark blue.

6.4 Discussion

6.4.1 Comparison of *Permanency-Related Term Frequencies in Posts by Role*

The analysis of how frequently *Permanency-Related Terms* are included in posts based on the *Role* of the poster provides evidence that people with lived experience in foster care talk about permanency-related topics differently than people who have not spent time in foster care. Overall, People with Lived Experience were two times as likely as Other Roles to include any permanency-related topic in their posts. All three types of permanency were more common for People with Lived Experience to discuss, but the disparity was larger for relational (1.9 times as likely) and cultural (1.7 times as likely) than it was for legal (1.3 times as likely). In addition, relational permanency was the most commonly discussed type of permanency at a statistically significant level in a within-group analysis of permanency-related posts by People with Lived Experience. These findings reinforce the recent movement (e.g., Burge, 2020; Salazar et al., 2018; Wilen, 2022) to broaden understandings of permanency beyond solely legal ones. It is important to note here that this does not mean ignoring legal permanency needs, but rather integrating them with relational and cultural permanency needs to ensure children and youth have access to truly meaningful and long-lasting connections with adults.

The findings also point to a few specific areas of focus within these types of permanency for people with lived experience in foster care. For legal permanency, the concept of aging out was three times as likely to show up in a post by People with Lived Experience as in a post by Other Roles. This provides further evidence of the importance to many people with lived experience of increasing levels of legal permanency among older youth, as efforts at achieving legal permanency for teens often fall short (Avery, 2010). For cultural permanency, the concepts of holidays and

religion were each more than two times as likely to be included in posts by People with Lived Experience. Very little research considers the connection between religion and foster care. However, Godina (2014, p. 381) found that “professionals lack the knowledge and skills needed for understanding those who are subscribing to strong religious beliefs” in a UK study of social workers engaging with religious parents. Additionally, Schreiber (2008) found that in the United States roughly 65% of non-kin foster parents attended weekly religious services compared to an average of 39% among the general population. The focus of people with lived experience on this topic, along with the high rate of religiosity among non-kin foster parents indicates that practitioners and researchers should devote a greater amount of attention to better understanding religion’s role in many foster care experiences. For relational permanency, People with Lived Experience were roughly twice as likely as Other Roles to bring up friends, community, and being alone in a post. Much of the literature on relational permanency focuses on relationships between youth and caregivers (e.g., Pérez, 2017) or mentors / supporting adults (e.g., Avery, 2011). While these areas are important, our findings build on those of researchers like Best and Blakeslee (2020) that peer relationships and informal social networks are areas of focus for youth and therefore deserving of greater attention.

One other area of interest related to this analysis is a term that did not show up at high rates in posts. The term “permanency” itself was among the least common *Permanency-Related Terms*, coming up in only 1.4% of posts by People with Lived Experience and 0.6% by Other Roles. This is important to note as a reminder that permanency (as with many child welfare system terms) is much more academic and technical than colloquial. Social work research and practice should be careful to recognize and ground discussions related to permanency in more intuitive understandings of what it means for children and youth to have meaningful, supportive, and long-lasting relationships.

6.4.2 Comparisons of Sentiment and Speech Acts Between and Within Roles

In addition to understanding *what* people focus on related to permanency based on whether they have lived experience in foster care, our findings can also help with understanding *how* people discuss and feel about those topics. To understand differences between how People with Lived Experience and Other Roles conceptualize permanency, we can consider the comparison of *Sentiment* and *Speech Acts* in posts that contain *Permanency-Related Terms* by the *Role* of the poster. In this analysis, we found that People with Lived Experience tended to discuss permanency-related topics with more negative or mixed sentiment along with more emotional expression and disclosure than Other Roles. Unsurprisingly, but notably, these stronger feelings and more personal forms of expression demonstrate the importance and seriousness of permanency-related topics to the lives of people with lived experience in foster care. Cho (2017) found that negative emotional disclosure on social media often indicates help-seeking behavior related to stress and trauma from negative events. This potential help-seeking behavior demonstrates an urgency to address topics related to the various types of permanency that have been discussed.

The third analysis also points to the particular need to address issues related to permanency. Within posts by People with Lived Experience, this analysis compared the *Sentiment* and *Speech Acts* of posts based on whether the posts contained any *Permanency-Related Terms*. The findings showed that compared to non-permanency-related topics, People with Lived Experience’s permanency-related posts were more negative or mixed, and less neutral. The permanency-related posts also

contained more questions, informational support, recommendations, and disclosure, and less acknowledgement. For *Sentiment*, these findings indicate that permanency-related topics were tied to particularly strong feelings for People with Lived Experience. For *Speech Acts*, the relative lack of acknowledgement, and disproportionate engagement in problem-solving through asking questions, providing informational support, and making recommendations, provides further evidence of help-seeking behavior. The need to address issues related to permanency in its various forms seems to be especially relevant to people with lived experience in foster care both in relation to other people and in relation to other areas of interest in their own lives.

6.4.3 Policy Implications

One way to address issues like these at a systems-level is through enactment and implementation of effective policy solutions. There are many potential policy recommendations related to permanency that can be made, but here we will introduce three – one for each of the areas of legal, relational, and cultural permanency in US federal policy. For a reminder of related policy and acronyms, see Section 6.1 and Figure 6.2.

For legal permanency, the recommendation is to remove Title 42 – “The Public Health and Welfare” U.S. Code § 675(5)(E). This is the clause of ASFA that requires states to seek termination of parental rights if a child has spent at least 15 of the previous 22 months in foster care, unless the child is in a relative placement, the state has a compelling reason why termination of parental rights is not in the best interests of the child, or the family has not received services outlined in the case plan. Once a parent’s rights have been terminated, it eliminates the legal path toward reunification. Especially for teens, this removes one of the more likely paths toward legal permanency and increases the likelihood of aging out (Adams, 2017), which this study indicates is an important area of concern for people with lived experience. In some cases, termination of parental rights to facilitate adoption or guardianship is the preferred path forward, but it should not be the default pathway for any child based on an arbitrary and relatively short period of time spent in the foster care system.

For relational permanency, the recommendation is to significantly redesign the process for rating kinship navigator (and other) programs by the Title IV-E Prevention Services Clearinghouse (i.e., the Clearinghouse), as required to use federal funds for support under FFPSA. The Clearinghouse provides a 52-page handbook (Wilson et al., 2019) with a prescriptive one-size-fits-all approach to designing, conducting, and reporting an evaluation of a program that is heavily based in methodologies relevant to the field of psychology. Specifically, experimental designs with large sample sizes, formal state data, and standardized measures are prized, with qualitative results based in the lived experiences of individuals not counting as evidence at all. The approaches laid out in this handbook are one way to do research, but they are highly limiting to understanding and evaluating programs that might be difficult to evaluate in this exact way. More urgently, these approaches are completely dismissive of lived experience as a way of measuring the quality of a program. We have seen the downside of these strict standards in practice, as zero informal kinship navigator programs have been given evidence-based status five years after the passage of FFPSA. To address this major impediment to relational permanency, policy could be passed to redesign the Title IV-E Prevention Services Clearinghouse. The redesign should target a simplification of the program and a recognition of multiple types of valid evidence. An example to follow might be the California Evidence-Based Clearinghouse for Child Welfare, which simply requires

submission of several peer-reviewed studies of a program evaluation. A new Clearinghouse process that allows for more realistic evaluation of the effectiveness of informal kinship navigator programs would be vital for supporting informal kinship families and allowing children and youth to remain in their communities, schools, and among their existing friends and social networks. Not only an effective strategy for increasing relational permanency, supporting and encouraging kinship care is a way of promoting cultural permanency too (Denby, 2015), as kinship caregivers are more likely to share the cultural backgrounds of children and youth in their care.

For cultural permanency, another recommendation is related to repealing and replacing the IEP amendment to MEPA. Wollen, et al. (2023) lay out a series of proposed changes to MEPA-IEP aimed at ensuring children and youth cultural continuity in placements. Their recommendations – like allowing individualized consideration of race and culture at placement – are primarily based in evidence of needs related to race and ethnicity. Our findings also provide evidence of religion being a significant element of culture for people with lived experience, and therefore we recommend extending their recommendations to include religion more explicitly. In particular, religion should be allowed as one area of consideration at time of placement and child welfare staff should be trained to understand how religion might impact a child’s case. One important note here is that this does not necessarily call for children and caregivers to have the same religious background, but instead to allow consideration of whether a child’s beliefs will be respected and tolerated by caregivers when making a placement decision. Ensuring cultural continuity on the basis of race, ethnicity, religion, and other important elements of identity through these recommendations would be an important step toward codifying cultural permanency in federal legislation.

6.4.4 Practice Implications

A second way to address the issues raised in our findings is by altering social work practice more directly. Three areas of practice that could be changed to better engage children and youth are the child welfare workforce, courts, and independent living programs. For the workforce, these findings indicate the importance of building trusting relationships, partnering, communicating, listening, and having cultural humility in engagement with children and youth. These findings align with several of the recommended competencies and characteristics from a Wollen, et al. (2022) systematic literature review of how child welfare staff can support successful youth engagement. The indication in our findings that people with lived experience often discuss permanency more frequently and differently than others is evidence that communication and listening to children and youth is important. The importance of relational permanency points to the need to build trusting relationships and partner with children and youth. This sort of engagement takes time and requires supervisor, leadership, and peer support to validate this type of work as a priority. Finally, the relative importance of cultural permanency to people with lived experience compared to others indicates the need for members of the workforce to approach children and youth with cultural humility to better understand and value their cultural perspectives, and to reflect and mitigate any biases that could impede mentorship and interaction with youth.

For courts, our findings similarly indicate the importance of prioritizing youth perspectives and relationships over the standard operation of typical court procedures. Court hearings should be held after school hours at times that accommodate youth schedules to avoid disrupting important relationships youth have outside of court. Court professionals should also take time to build

relationships with youth by acknowledging their presence, explaining the process, communicating in clear language that can be understood by non-law professionals, and allowing time for them to speak and ask questions during hearings (National Council of Juvenile and Family Court Judges, 2023). In addition, relationship building can also occur via engagement outside of child welfare proceedings through practices like family group decision-making meetings (Pennell & Burford, 2000). Court staff can play the role of organizing and facilitating these meetings, which give children and youth, their families, and other supportive adults the opportunity to help make group decisions about the young person's case plan. Attorneys, guardians ad litem (GALs), and court appointed special advocates (CASAs) should also have regular meetings with youth ensure they are being supported and update them on their case progress. These basic recommendations speak to the deep need to infuse courts with human-centered practices that can aid in building trust and lessen confusion and intimidation commonly experienced by laypeople (Karpen & Senova, 2021).

For independent living programs, a continued focus toward interdependence and social support (see Section 2.1) should be prioritized. Much of this recent movement has emphasized social connections and support with mentors and supportive adults (Greeson et al., 2015). These relationships are important, but our findings indicate that connections with peers and community-based organizations should also be a focus of independent living programs' emphasis on helping youth build social networks. Minimal recent literature exists on the topic, but our findings also suggest the importance of Barrio's (2000) recommendation that community support services should provide culturally relevant services to ensure that social support can be received effectively. Helping youth to connect with individuals and organizations that reflect important aspects of their identity (as defined and directed by the young person) should be an area of focus for independent living programs.

6.4.5 Strengths and Limitations

The strengths and limitations of this study are based in the data source and methods that are relatively novel in the child welfare research and policy space. The naturalistic conversation contained in an emerging, public online community like this allows for many voices of people with lived experience to provide input on a topic like permanency without influence from researchers. This is powerful as a way of providing a diversity of lived experience perspectives in a dataset large enough to analyze quantitatively. In addition, there is strength in having a member of the research team with lived experience in the foster care system. This was particularly helpful with ensuring the set of *Permanency-Related Terms* was broad enough to capture a range of permanency types beyond solely what is included in the literature. This researcher's perspective was also instrumental in the interpretation of findings and appropriateness of policy recommendations. However, the research would have been stronger if we were able to include additional researchers with lived experience to provide a diversity of lived experience perspectives on the work. Relatedly, one limitation of this work is that, unlike a set of human qualitative coders, natural language processing techniques like lemmatization are not able to interpret context for the terms' use when coding posts. Another limitation of the work comes from the data source being a public, pseudonymous online community, which means that we do not know the identities of our participants and whether they are representative of the larger set of people with lived experience in foster care. In particular, the exact ages and types of permanency experienced by these individuals is not always clear, but such factors are likely to affect the direction of discussions in the community. Similarly, we do not always know the expertise or exact roles of people without

lived experience in foster care, which are also likely to influence discussion. These unknowns mean that we cannot make claims of generalizability, but we do note that this study provides some empirical evidence in several understudied areas of permanency.

6.5 Conclusion

This chapter describes an empirical study of the concept of permanency in a naturally-occurring online community of people with lived experience in the foster care system. While only representative of one online community, these findings provide evidence for the importance of including the voices of people with lived experience in permanency planning and expanding focus beyond legal permanency to include greater emphasis on cultural and relational permanency. The research explores how these findings can inform permanency-related US federal policy and practice. Future research can expand on these findings to more deeply explore the permanency-related topics that were identified as important to people with lived experience.

Ch 7: Data Visualization Needs of Child Welfare Professionals (RQ4)

The data information needs of professionals working to shape public policy related to child welfare in the United States are complex. In this chapter, we report on our approach to studying these needs to inform the design of a potential tool for accessing the data that would support those professionals. Our study population consisted of professionals concerned with influencing public policy related to the lived experiences of youth who are transitioning out of the foster care system into adulthood. To conduct this study, our process included training a team of student researchers to (1) understand the domain through secondary sources, (2) identify topics to focus on in discovery interviews, (3) conduct the interviews and analyze results to (4) inform the design of a system that would support the work of domain professionals. Our findings indicate that professionals in the child welfare research and policy space are interested in having access to customizable and interactive research support tools that include data visualization as a core functionality and are easy to use for people with limited technical expertise. In particular, these professionals are interested in visualizations of both administrative and lived experience data presented in simple, colorful, and humanized ways with the ability to disaggregate at geographical levels that are meaningful to impacting policy. Future research should include development of the visualization tools identified here and a subsequent usability study to confirm the value of our design recommendations.

In this chapter, “we” refers to the research team of myself, Mark Zachry, and members of the Fall 2021 and Winter 2022 DRGs (see Acknowledgements).

7.1 Introduction & Related Work

Researchers who are interested in designs that could improve human experiences in the U.S. child welfare system are challenged in many ways. The child welfare system includes a wide range of people, from the children themselves to government officials, from agency personnel to advocates who seek to affect national policies. Complex social systems like this one represent among the most difficult spaces for researchers to investigate the information needs of people and to design meaningful interventions. Despite these challenges, prioritizing meaningful interventions within the child welfare system and other vulnerable populations is necessary for research to make contributions for social good. This study documents a discovery approach aimed at supporting the work of professionals who are seeking to address challenges in the child welfare system through changes to public policy. Within this large and complex space, our specific focus was on understanding and addressing the data visualization needs of researchers and policymakers attempting to support young people who are transitioning out of foster care and into adulthood, a transition well known (Berzin et al., 2014; Courtney, 2009; Dworsky et al., 2013; Singer et al., 2013) to be fraught with difficulties.

Over the last three decades, several researchers in technical and professional communication have explored the intersection of the field with public policy. These explorations have argued for conceptualizing the practices of public policy development and negotiation within the rhetorical sphere of the field (Rude, 2004; Rude, 2008; Williams, 2009). Connecting this argument to the training of next generation technical communicators, others have argued for engaging students in learning activities directly engaged with policy issues (Olds & Wiley, 1991; Wickman, 2014). The

work we report on here takes up this call, involving students as researchers in the development of a communication tool to support the efforts of policy making in child welfare.

The child welfare system in the United States itself has received very little attention in the scholarship of the field of technical and professional communication. A recent exception (Carlson, 2020) includes a short example of a foster care project embedded in a technical communication class. This example is notable because the researcher uses the project to advance an argument for “comradeship” advocacy related to public goods. In the closely related human-computer interaction field, there are additional signs that child welfare research is an emerging topic of interest. The child welfare research there so far focuses on algorithmic decision making (Saxena et al., 2020) and uses of online social networks (Badillo-Urquiola et al., 2017; Fowler et al., 2022). In this early work, researchers acknowledge the integral connection between child welfare and policy, though they stop short of recommending specific interventions.

This chapter reports on our effort to use a research-based approach to have an impact on policy related to the transition of foster youth to adulthood. Since the child welfare system in the United States is fundamentally a group of services and procedures determined by a complex set of legislation (Foster Care Explained, 2021), communicating research findings to policymakers is essential to produce real change. In this context, policymakers have minimal time available to read through long research papers, turning to much more succinct policy briefs and one-pagers to make evidence-based decisions (Izumi et al., 2010). To address this need, we were drawn to the potential for data visualizations as a potential approach to engaging policy makers with important data in an efficient way (Kostelnick, 2016). Visualizations, with their capacity to engage through emotional appeals (Kostelnick, 2016) and to pack large amounts of information into a small space (Tufte, 2001; Few, 2020), appeared to us as a potential professional communication approach that could have desired effects. In particular, we anticipated that data visualizations could have an impact on two genres ubiquitously present in policy-making processes, the compact one-pager and the policy brief. We pursued this project to discover the data visualization needs of social work researchers and child welfare advocates, and then to design a tool that would address their needs to communicate key data to policy makers in their deliberative work.

An example of such a dataset that is commonly referenced in child welfare research is the semi-annual release from the federal Adoption and Foster Care Analysis Reporting System (AFCARS) (Foster Care Explained, 2021). Through the brainstorming of a topic grounded in current legislative agendas of child welfare advocacy organizations, the development of an exploratory interview study design, and analysis of the results of these interviews, this case study seeks to explore how AFCARS data can best be visualized and communicated in child welfare research and policy advocacy. In this chapter, we describe our methodology, present our results, and discuss the implications of these exploratory findings, especially as they relate to the future design and development of interactive web-based visualization tools to help policy researchers and advocates communicate information to policymakers in their compact one-pagers and policy briefs. Our ultimate goal with this project was to support the advancement of policy making based on the best available evidence, communicated in an effective manner.

Our approach involved training a group of researchers to rapidly understand key features of this complicated social system, identify primary concerns based on secondary literature reviews, and

to then discover the specific information needs of the broad community of child welfare researchers and policymakers. Through this process, we were able to identify a dataset that would have potential direct impact and we discovered possibilities for creating a visualization tool that would make that dataset available in a powerful way to those working to improve the life experiences of youth aging out of foster care. Our process was oriented toward designing a data visualization tool with the values of our user community as our top priority (Acharya, 2017; Overmyer, 2019). We thus sought to integrate best practices in technical communication related to data visualization with a user experience design focus (Rose & Schreiber, 2021).

7.2 Methods

7.2.1 Fundamental Research

For this project, we conducted an interview study over the course of sequential academic terms with students in a directed research group (DRG). The first term of the DRG consisted of four undergraduate and three graduate students led by myself and my advisor. Much of that term was spent on selected readings to ensure that students had sufficient background on a variety of topics, enabling them to pursue the investigation with sufficient domain knowledge. Readings that focused on the child welfare system included literature focused on the current structure of the system, social worker attitudes to incorporating research in practice, system inequities, and the transition to adulthood. Additional readings focused on visualization techniques, with particular attention paid to clarity and emotion in visualization and the use of interactivity to engage and persuade. The final set of readings focused on papers about foster youth in the child welfare system from the fields of technical communication, social work, and policy reports, briefs, and factsheets. This background reading period was important as a mechanism for preparing a student research team that had a range of familiarity with the topics of child welfare and visualization techniques so that it could meaningfully engage in community-focused user research at the intersection of these two fields. In short, the research team had to invest time in the domain space before it could meaningfully talk to the end users we hoped to support with our design.

After reading and discussing this literature among the group, the team used affinity diagramming to determine the direction and content of the interview study. To prepare for this, team members reviewed websites and forums related to child welfare and visualizations. Additionally, an expert on child welfare from the university's School of Social Work was consulted for recommendations. After this, team members reviewed child welfare blogs and advocacy organization websites (including <https://www.treehouseforkids.org>, <https://partnersforourchildren.org>, <https://www.nrc-fahe.org>, <https://www.thinkof-us.org>, <https://robertlathamesq.org>, and <https://www.aecf.org>).

To identify possibilities for a design intervention in the work of child welfare research and advocates, we focused on two questions: (1) What are the issues that these organizations or people are advocating for right now? (2) What are the barriers or opportunities for change related to those issues? With this process complete, the team made two decisions to advance the project by engaging with members of the research and advocacy community: *who* to interview and *what* to ask about.

7.2.2 Interview Study Topic Brainstorm

Our affinity diagramming process (see Figure 7.1) to determine the direction and content of the interview study resulted in a focus on two topics: (1) access and success in higher education and

(2) transitions from institutional care into adulthood. The first topic was derived from the most common “issue” of education having connections to multiple “barriers and opportunities” including policy, institution, learning, resources, and extended care. The second topic was derived from the second most common issue of transition having connections to multiple “barriers and opportunities” including extended care and resources.

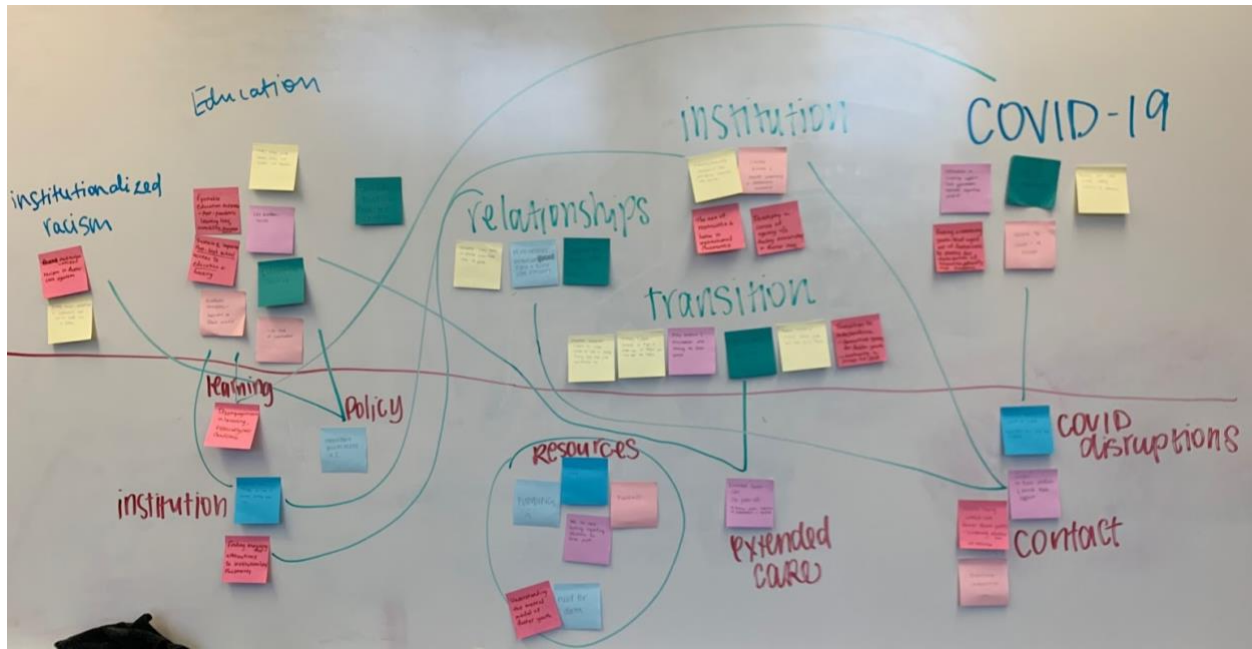


Fig. 7.1 The affinity diagram to identify topics to address in the interview study. The top half of the diagram includes all the “issues” while the bottom half includes all the “barriers and opportunities” to addressing issues. Lines were drawn to represent connections between issues and barriers and opportunities. Note that “resources” is circled because it has connections to each of the issues.

7.2.3 Interview Study Design Brainstorm

Through this discovery process, the team identified characteristics of people within the user community to potentially interview: people with lived experience in the foster care system; people familiar with AFCARS; researchers, policymakers, and educators in this space; people doing translation work and writing policy briefs; academic advisors; and social workers. Based on this list and the connections of the lead author, we selected the target population for participants to be *professionals who do research and inform policy* in the child welfare space. Our eventual participants met this description, including professors doing research on child welfare, a research coordinator at a policy-focused research institute, and the founder of a child welfare, policy-focused non-profit organization. Many of these individuals are also people with lived experience in the foster care system, and most had received a Masters in Social Work degree.

Our brainstorm of *what* to ask about during the interview included: how the participant uses AFCARS data in their work today; how the participant’s work relates to the challenges faced by young people; and how the participant uses visualization in their work today.

Our process resulted in the following motivation, shared with members of the user community, for the interviews: “We are a group of human-centered design and engineering researchers aiming to learn background information for a future study. We are interested in speaking with professionals who do research and inform policy in relation to higher education and the transition to adulthood out of the foster care system. In particular, we are interested in how these individuals use AFCARS data and visualizations in their work.”

7.2.4 Interview Protocol Development

The second term of the directed research group focused on interview protocol development, conducting interviews, and analyzing results. Of the original research team, four students continued working with us. The research from this term had the additional challenge of needing to be conducted entirely remotely due to the onset of the Omicron wave of COVID-19. To meet this need, the team conducted group meetings and interviews using Zoom and whiteboarding sessions on Miro boards.

Based on the group decisions from the end of the first term, the lead author drafted an interview protocol with the motivation for the study, a list of potential interviewees, and a set of questions to ask. This draft was iterated on by the team and finalized to include an interview script with an introduction, set of questions, and close. Because the interviews were conducted with professionals regarding how they do their work, IRB approval for this part of the study was not required by our institution. However, participant names and demographics are not included in this study to protect anonymity.

After reaching out to potential interviewees and scheduling, we conducted five expert interviews. Each interview lasted approximately 25 minutes, and included a moderator and one or two notetakers from the research team. The questions asked in the interview included:

- How does your work relate to the transition to adulthood out of the foster care system?
- How does your work relate to higher education and the child welfare system?
- How does your work relate to informing policy makers?
 - Have you discovered any roadblocks in this process? If so, how?
- How do you use data in your work?
 - Could you give me an example of a time you have used data in your work?
- How do you use visualizations in your work?
 - Walk me through a time when you used a visualization in your work.
 - Could you show us an example of any visualization(s) you have used in your work before?
- How do you use AFCARS data in your work?
 - Could you give me an example of a time you’ve used AFCARS data in your work?
- When using that data, do you find the included visualizations helpful?
 - Why or why not?
 - What are some issues or roadblocks you have encountered regarding visualizations in your work?
- Are you aware of other ways that people use AFCARS data in their work?
- If the data could be accessed and/or presented differently, are there other ways you would be interested in using AFCARS data in your work?

After the interviews, we identified key opportunities and takeaways as a set of bullet points. Our team then grouped opportunities and takeaways from all five interviews in an affinity diagram. We named each grouping to identify the theme and organized them into categories of needs expressed by the professionals. Using these categories we generated a design, along with design priorities, data concepts, and tool specifications for achieving that design as we describe next.

7.3 Results

7.3.1 Interview Study Results

Our analysis of the interviews yielded a set of key opportunities and takeaways, which we then transformed in a set of cross-cutting findings (see Figure 7.2) focused on overall needs.



Fig. 7.2 The affinity diagram of key opportunities and takeaways from each of the five interviews. Each color of sticky note corresponds to a single participant.

The needs expressed by the professionals fell into two major categories. The first major category was to include the right data. For these professionals, the “right data” meant a mix of quantitative and qualitative data, with particular emphasis on data from the lived experiences of people who have spent time in foster care. Additionally, members of the community identified the use of multiple – often linked – datasets as a data visualization need. See Table 7.1 for a list of each “right data” need and selected interviewee quotes that express those needs.

Table 7.1 Professionals’ needs related to having the “right data” along with representative quotes

“Right Data” Need	Representative Quote
Include data from lived experience of people who have spent time in foster care	“Visualizations of qualitative data, I don’t know that I’ve seen the idea of... Developing such a thing would be completely novel and unbelievable... because Congress cares about the voice of the lived experience... that could be seriously groundbreaking.” - P2

Include qualitative data visualizations	
Use multiple datasets	“We need to be collecting more data about people’s lived experience directly from them. The AFCARS data is about data where a paid professional is in play. So, they’re two very different datasets. And, they’re both needed. So, how might we actually have a fuller picture because we get to have both at the table?” - P5
Link datasets	“Linking in general is really useful because each dataset has sort of a particular focus.” - P4

The second major category of need expressed by the professionals was to design the right experience for the end user. Part of this experience includes making it easy for stakeholders, policymakers, and beginners to interact, customize, and explore the data and understand the visualizations that are created, especially through explanations and disclaimers that might be presented alongside the visualizations. Along this vein, professionals expressed interest in humanizing the data by presenting it in a way that emphasizes the story of a person’s experience. Professionals also emphasized the importance of tailoring visualizations to the needs of policymakers, especially by keeping the visualizations simple, colorful, and using maps that correspond to relevant policy-level aggregations. See Table 7.2 for a list of each “right experience” need and quotes representative of those needs.

Table 7.2 Professionals’ needs related to having the “right experience” along with representative quotes

“Right Experience” Need	Representative Quote
Make it easy to understand visualizations for beginners	“I would certainly, like, welcome understanding which tools other folks are using to, like, clean and understand the data, and, um, any limitations there might be because I’m frankly still learning about AFCARS... I would love resources for how to navigate it... Are there places that I really should be concerned about bias?” - P1
Add explanations and disclaimers to help researchers better understand the data	
Humanize the data by presenting it in a way that emphasizes the story of a person’s experience	“Most researchers who look at AFCARS data actually put categories like Tribal kids, Native Hawaiian kids, and kids who are Black or Hispanic into an ‘Other’ category, which means all those voices get lost. So, if you are data savvy and can easily work with datasets that have thousands of people in it, you’re able to tell stories for those who typically don’t get a voice in these conversations.” - P2
Make visualizations simple and colorful to engage policymakers in the results	“Tables in APA style that are appropriate for academic journals are not necessarily the best way to visualize findings for policymakers, right? Colorful graphs and easy-to-

	understand diagrams and things like that will probably be better.” - P4
Use interactive and customizable visualizations to allow stakeholders, policymakers, and beginners to explore the data	“An interactive data tool where you can go on and run different, you know, plug different queries.” - P3
Use geographical maps of data at policy-level aggregations	“If I could visualize AFCARS data by county and really understand where those challenges are, then our initiatives, we would be able to understand ‘Where are they most needed?’” - P5

7.4 Discussion

The results of this study provide evidence in support of designing an interactive web-based tool for professionals working with child welfare data. Our interview study design process allowed us to focus on the relevant and timely child welfare topics of: (1) access and success in higher education and (2) the transition to adulthood out of the foster care system. Because the process of selecting these topics was based on current legislative and political agendas from a variety of prominent child welfare advocacy organization websites, we felt somewhat more confident as researchers coming from outside traditional social work research in the utility of focusing on these topics at this moment in time.

Being able to interview multiple expert professionals in this field also provides confidence in the design priorities of the project. In particular, the interview findings indicate that a tool would be most helpful if it can: (1) include the “right data” and (2) have the “right experience” designed for the end user. In this case, the experts indicate the “right data” includes data that gets at the lived experiences of being in the foster care system, qualitative data, and multiple sources of administrative data that have been linked together. The “right experience” for the end user in this case is one that should be designed with explanations and humanization of the data onto simple and colorful visualizations that stakeholders, policymakers, and newcomers to visualization tools can easily interact with and customize in their desired explorations. This interest in color and engaging the user’s emotions in interactive data visualizations aligns with general trends in the field (Kostelnick, 2016). The desire for simple and efficient communication of evidence also fits with the known strengths of data visualization (Tufte, 2001; Few, 2020) and the professionals we spoke with confirmed the importance of including such charts in policy briefs and one-pagers (Izumi et al., 2010). Our findings also indicated that, particularly for policymakers, geographical representations of data that fit policy-level aggregations are ideal.

Based on these findings, the data visualization needs of child welfare system researchers could be ideally met through the design and implementation of an interactive and customizable web-based data visualization dashboard that integrates a variety of administrative datasets and qualitative lived experience datasets. For data needs, administrative child welfare data from the National Youth in Transition Database could be linked to AFCARS data to provide a more focused view of outcomes related to the transition period out of the foster care system. To incorporate more

qualitative lived experience data, alternative data sources – like social media data – could be included to both supplement and show what may be missing from the quantitative datasets more typical of administrative data. Interviewees indicated that data would be seen as more “human” if it somehow also reflected the lived experiences of the people it represents. One way that this could be done is by structuring the presentation of available data elements in a meaningful “narrative” of how a person might experience them. For example, visualizations might be presented on different pages depending on topic, and the tool navigation could guide the user to explore those topics in an order that would provide some narrative structure (e.g., start with visualizations relevant to entry in foster care and end with ones relevant to exits from foster care). Another way to humanize the data would be by providing explanations and disclaimers of the data and visualizations alongside any charts and graphs. Additionally, AFCARS data elements related to demographics, geographic locations, and time could be included for the user to customize how experiences in the foster care system vary across these relatable dimensions. The visualization tool that is chosen to implement this design would ideally allow for users to engage with and customize data visualizations, while eliminating the need for coding, data cleaning, or designing the data visualizations themselves. If implemented, the design criteria presented here would yield a highly desirable tool, but the challenge would be significant. Tradeoffs in implementation might be required when realistic concerns about time, skillset, and funding are taken into consideration. For example, including data from additional sources would require funding to support higher memory capacity needs.

In addition to these findings related to the data visualization needs of child welfare professionals, this chapter also has implications for researchers interested in gaining insight into the needs of specialized populations of individuals working in complex, geographically-diverse systems. In particular, the process followed in this chapter can be adapted for studying the needs of similar populations. Some considerations that researchers should pay attention to include the need to immerse a group of researchers in the particulars of such a domain space before engaging in the exploratory research itself. Several months were spent deeply engaging with particulars in the domain space in order to more effectively be able to learn from and communicate with interviewees. Without adequate context, it is difficult for researchers to get at the often complex needs of populations in spaces like this. Consultation with experts in the field—both informally throughout the discovery process and more systematically through rich qualitative methods like interviewing—is also vital for ensuring that the research stays focused on actual needs of the population. In addition, our use of remote interviews allowed us to reach individuals from across the United States and gain a more geographically, racially, and culturally diverse set of interview participants. In any future studies that seek to design and evaluate a prototype of a tool like the one described in our findings, similar broad outreach to experts in the field would be equally relevant. For example, a remote usability study of a tool prototype with a geographically diverse set of individuals from the population of child welfare professionals would be a valuable way to evaluate how effectively the study described above allowed us to identify real needs of the population. This emphasis on geographic diversity is also particularly important as it relates to the communication of data visualizations to policymakers. Designing and evaluating a tool that would work for individuals active in a range of locations makes sense if it is to be given the best chance at supporting advocacy efforts related to both local and national policies.

7.5 Conclusion

This chapter provided insight into the data visualization preferences of professionals working on child welfare research and policy advocacy. Access to interactive, customizable dashboards of simple, colorful, and engaging data visualizations that humanize and explain the data are desired by individuals working in this space. Future research should include development and user testing of tools that meet these design recommendations. In addition, this chapter provides more general insights related to working with student researchers on processes for identifying needs of individuals working with specialized populations and communicating to policymakers.

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Ch 8: Interactive Data Visualization Tool in Support of Research and Policy (RQ5)

User-centered design describes the involvement of participants in the iterative design of a product to understand and address their needs. In this chapter, we extend our findings from the previous chapter, taking a user-centered design approach to create VizCare, an online data visualization tool for child welfare professionals. The tool was designed to help professionals explore administrative foster care data from the Adoption and Foster Care Analysis and Reporting System (AFCARS) with the aim of creating visualizations to be downloaded and communicated to policymakers. The iterative design process for creating VizCare involved building a prototype from the interview results in the previous chapter, usability testing, revising the tool for public release, gaining real-world feedback on the tool from a validation survey during the first month of its release, and making a few minor revisions of the tool based on the survey findings. Our findings indicate that the VizCare tool is useful for many child welfare professionals in creating data visualizations that they would use in research or communicate to policymakers. The user-centered design process – particularly the multiple points of meaningful participant engagement – was effective in facilitating communication of visual data evidence by researchers and advocates for policy purposes. Future research and design work should include regular maintenance of the VizCare tool and extending the tool with additional functionality, AFCARS data elements, and other relevant child welfare datasets. Additional research could be done with policymakers to understand how useful visualizations created with the VizCare tool are for making policy decisions.

In this chapter, “we” refers to the research team of myself, Mark Zachry, and members of the Spring 2022 DRG (see Acknowledgements).

8.1 Introduction & Related Work

User-centered design is an interdisciplinary domain that aims to understand and address human needs through product design. This chapter describes the iterative user-centered design and evaluation of an online tool called VizCare (<https://uw-hcde.shinyapps.io/VizCare/>) aimed to help child welfare professionals with data visualization needs related to foster care research and policy advocacy. One of the core elements of the broad philosophy of user-centered design (UCD) is that “end-users influence how a design takes shape” throughout the development process of a product (Abrams et al., 2004, p. 2). The UCD philosophy takes a practical and direct approach to meeting the needs of people by involving (to various degrees) end-users in the process of defining their own needs and designing and evaluating products to help meet those needs. With this involvement, UCD methods place authority in an individual to understand and articulate their own needs and to reveal to designers and engineers how they might help to address those needs. In this study, the “users” of the VizCare tool are child welfare professionals with a range of vocational and personal identities (e.g., researchers, policy advocates, people with lived experience, and social workers) interested in impacting policy related to the transition to adulthood from foster care at least in part via visual representations of data. Participation and feedback from these child welfare professionals was encouraged throughout our user-centered design and evaluation process, and the resulting VizCare tool serves in part as an artifact of this collaborative and iterative involvement.

UCD methods used in this study to facilitate and make sense of this user participation and feedback include interviews, surveys, prototyping, usability testing, and qualitative coding (Lazar et al., 2017). These UCD methods are often interrelated and can be used in tandem to involve an

individual in order to iteratively and collaboratively understand and design for their needs (Abrams et al., 2004). They are also often oriented toward encouraging engagement from participants throughout the research and design process. Such involvement might most clearly be seen in the UCD method of usability testing, which is used to evaluate a product design by observing and listening to “representative users attempting representative tasks in representative environments” to find situated issues with the product that can be addressed by the researcher (Lazar et al., 2017, p. 263). Interest in participant involvement permeates throughout UCD methodology, as Linneberg & Korsgaard (2019) demonstrate UCD’s desire to engage with the participant even in indirect ways through their description of qualitative coding to give “a voice to one’s participants” and their statement that iteration on the “empirical material” can be “seen as interactive” between coders and participants (p. 9). UCD methods study individuals with the goal of impacting product design rather than individual behavior, including the engineering of interactive online tools and artifacts. Fawcett (2018) describes the motivation for creating an interactive online tool as “enabling” a behavior (i.e., research-informed learning). In usability testing, Hertzum (2020) emphasizes that evaluators should try to convey “that the session is a test of the product, not the user” (p. 44). UCD methods tend to observe individual attributes, involve participants, and seek to change products.

UCD methods typically require some level of participant involvement. Abrams, et al. (2004) indicate that UCD methods fit best when the goal is to “facilitate the task for the user and to make sure that the user is able to make use of the product as intended and with a minimum effort to learn how to use it” (p. 2). Facilitation of a task to be as easy as possible is likely to be more useful for behaviors that have been deemed difficult but of interest to the user population. Many of these UCD methods tend to produce more qualitative and subjective findings. As Curran (2013) points out, the data collection aspect of much UCD research has analogues to ethnography in its deep observation of human thoughts and behavior with the “interpretive” goal to “generate ideas, stories and insights” about those people rather than an “epistemological search for fact” (p. 70). This comparison to ethnography demonstrates UCD’s general acceptance with interpreting the thoughts and behaviors of individuals to produce subjective forms of evidence. Comfort with subjectivity can also be observed in qualitative coding methods, as Lazar, et al. (2017) state in their description of the method that researchers “accept that subjectivity is inherent to the process of interpreting qualitative data” (p. 299). UCD methods provide rich insight into the particulars and the complexities of an individual’s experience by immersing the researcher in ideas and actions of a user and producing for the audience carefully constructed interpretation of those experiences.

This combination of participant involvement and interpretive generation of insight to create a product make use of UCD methods a powerful approach for the goals of the current study. This chapter aims to build on the insights of child welfare professionals gleaned through the interview study in Chapter 7 to develop an online, interactive data visualization. Such a user-centered approach has been recognized as fitting for interactive visualization design previously (Wassink et al., 2009). In this case, the data visualization tool is particularly aimed at helping researchers and policy advocates to communicate data findings to policymakers. Research-to-policy translation has been noted as an area of need for improving policymakers’ use of data and research in decision making (Crowley et al., 2021a; Crowley et al., 2021b), with “clear translation, accessible and easy-to-use information, and relevance to the policy context” being especially important (Colby et al., 2008). UCD methods are used iteratively throughout the design process of

this study to ensure the relevance of the tool’s contents as well as the clarity and usability of the tool to the people for whom its use is intended. In order to create this tool and evaluate how effective these methods are in meeting the research and policy advocacy needs of child welfare professionals, we were guided by the following research question.

RQ: How well can a user-centered designed, interactive research tool support child welfare researchers and policy advocates with their data visualization needs?

The remainder of this chapter aims to answer this question and is organized as follows. First, we describe the iterative set of user-centered design and evaluation methods (see Figure 8.1) carried out to conduct this study and create the VizCare tool. Then, we present our results in the form of both the tool design at several stages as well as the evaluation results from the usability tests and validation survey that were used to engage participants and gain insights to guide tool revisions. Next, we discuss what we learned about the usefulness of the tool and the fit of the UCD design process. Finally, we conclude the study with several future considerations.

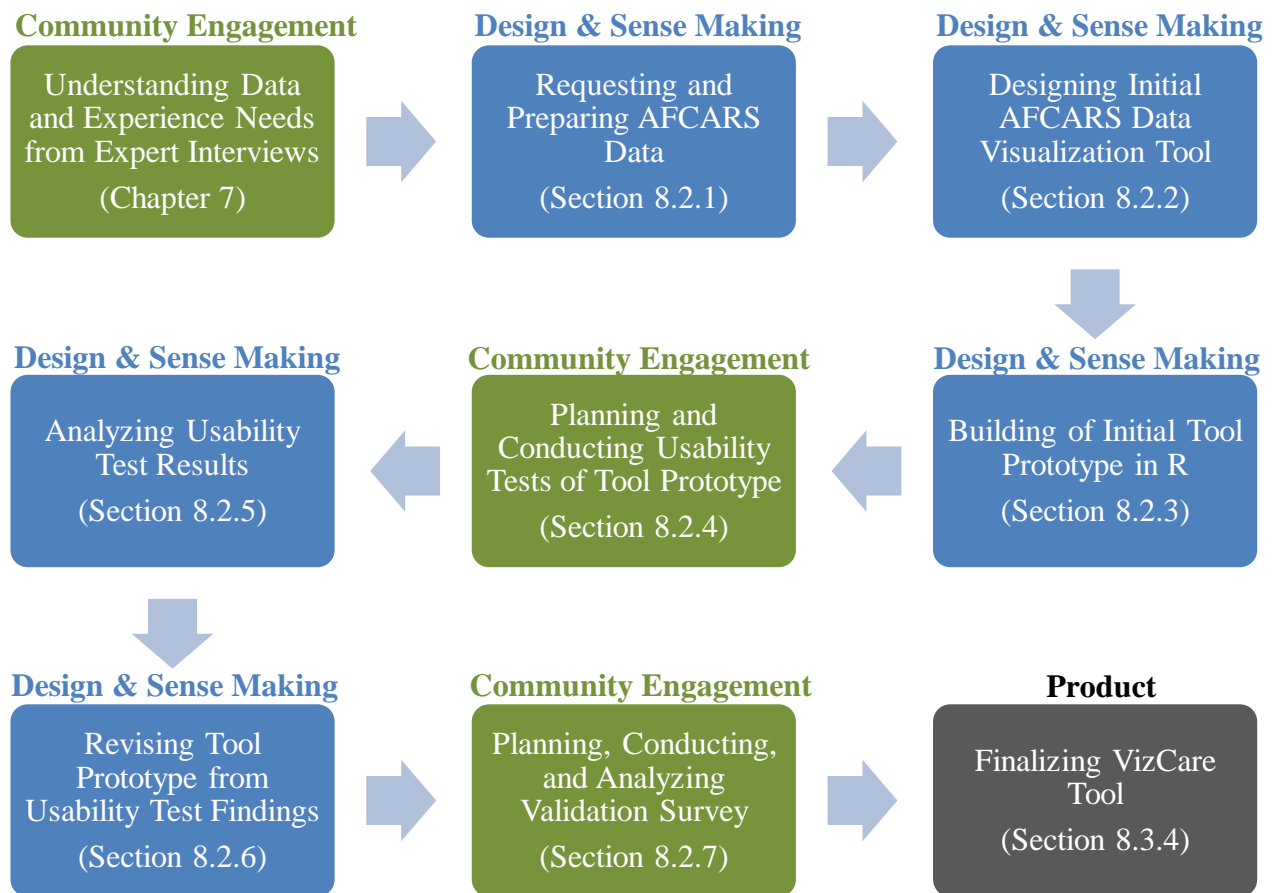


Fig. 8.1 Process diagram of key activities in this chapter. As outlined in the Methods section, this chart shows the key research and design activities from this chapter that resulted in the creation of the VizCare tool. Activities that represent community engagement with the target population are colored green, activities that represent design work and sense making by the research team are colored blue, and the activity representing the release of the final product is colored dark gray.

8.2 Methods

The methods section for this chapter outlines the iterative design and evaluation process followed in this chapter. This process involved thoughtful inclusion of feedback from members of the target population of the VizCare tool at multiple steps using several systematic methods. An overview of the larger process can be found in Figure 8.1.

8.2.1 AFCARS Data

The data source for the tool built in this chapter is Adoption and Foster Care Analysis and Reporting System (AFCARS) data provided by the National Data Archive on Child Abuse and Neglect (NDACAN). On 4/26/2022, the University of Washington Human Subjects Division provided a determination of this study being “exempt” from IRB review. NDACAN’s governing procedures guided many aspects of access and use of the dataset. Per the Terms of Use Agreement filled out with our data order, dataset #257: “AFCARS Foster Care File, 6-month periods (FY2016A – 2021A)” was provided by NDACAN for the purpose of a study aimed to support child welfare professionals with creating useful visualizations of the data, especially for communicating AFCARS findings to policymakers. This dataset provides six-month snapshots of administrative child welfare data for any child who spent time in the foster care system during that six-month period in each state in the United States. There were 24 data elements from the dataset used to construct the cleaned dataset created for the tool (see Table B.1 in the Appendix). The dataset was filtered to include only those children who were indicated to have been in at the start or entered foster care during the six-month period (i.e., variable #97 had a value of 1) and whose age at the end of the six-month period was 25 or less (i.e., variable #92 had a value less than or equal to 25). Cleaning and filtering of the data was done using R. After preparing the data, the final dataset used in the tool included 6,019,843 observations of 24 variables.

NDACAN provided the data with personally identifying information removed. In accordance with the Terms of Use Agreement, several additional precautions were taken to ensure that no individuals could be identified via unique combinations of filtered demographics and locations: (1) data visualizations remained at the state or national levels, rather than county level; (2) all data was displayed in aggregate form as percentages or averages; and (3) underlying data was not available for download. In addition, per the Terms of Use Agreement, I was the only member of the research team to work directly with the datasets.

8.2.2 Visualization Tool Design

The initial design of the visualization tool was largely informed by prior work in this dissertation. Findings from the expert interviews in Section 7.3.1 (also: Fowler & Zachry, 2023) indicate that people doing research and policy work related to the child welfare system have particular data and user experience needs related to data visualization for their work. In terms of data needs, findings showed that people were interested in having data from multiple sources, including both qualitative data from the voices of people with lived experience as well as more traditional administrative datasets. The interactive data visualization tool (<https://uw-hcde.shinyapps.io/FosterCommViz>) presented in Section 5.4.4 is an example of a tool that addresses the former data need, so the tool in this chapter focuses on the later data need with AFCARS data as the particular source. In terms of user experience needs, the findings pointed to interest in interactive, customizable data visualizations that allow users to explore the data on their own with simple and colorful visualizations to engage policymakers. Professionals wanted the data to be humanized and

presented in a manner emphasizing the story of a person's experiences. They also wanted the displays to be easy to understand for beginners to data visualization with explanations and disclaimers that can help with making sense of the data. Finally, they suggested using maps of data at relevant geographical levels for making policy decisions.

Based on these findings, members of the research team including seven graduate and undergraduate students in a Directed Research Group (DRG) worked in small groups to brainstorm persona use case paragraphs that could help us to envision who might be interested in a hypothetical AFCARS data visualization tool and how those personas might use the tool. This process helped us to center the professionals and their needs before beginning any specific designs of the tool. With the data experience needs from Section 7.3.1, these persona-use-case paragraphs, and the codebook of the available AFCARS dataset in mind, we then outlined the visualization tool prototype (see Appendix C.1). This outline was collaboratively built over the course of a week by members of the research team with initial work being done asynchronously, then iterated on synchronously during a DRG meeting. I then finalized the plan based on my greater familiarity with the dataset and practical considerations related to the team skillset and feasibility due to constraints in time and resources.

8.2.3 Visualization Tool Prototyping

After finalizing the outline of the data visualization tool prototype, we built the initial prototype itself over the course of two months. This process involved me coding the tool and the student research team providing weekly feedback based on fidelity to the outline and their own experiences with trying various parts of the tool. To build the tool, I used the statistical programming language R. Visualizations were created using “ggplot2” functions from the “tidyverse” package (Wickham et al., 2019) and charts representing geographic maps of the United States came from the “geofacet” package (Kashnitsky & Aburto, 2019). The “taskdesignr” package (Trattner, 2022) was used to display Word documents that can adjust dynamically with the tool interface for effective sharing of any large areas of text. The copywriting for these areas of text was worked on collaboratively and iteratively by me and the student research team.

The “shiny” package was used to build an interactive, customizable web application of these various data visuals (Chang et al., 2015). The shiny app was hosted and shared on a secure cloud server for hosting shiny applications (<https://www.shinyapps.io/>). At the time of starting the project, the hosting site's free account option allowed up to one gigabyte in storage, 1024 megabytes in working memory, and upload of up to five applications with user interaction of up to 25 hours per month. This method allowed for the creation of a working prototype that could be shared and accessed by others over the web at a custom URL with no financial cost. However, the technical nature of the backend coding and memory limitations associated with hosting the shiny application provided some limitations. I was the only member of the research team with sufficient time, expertise, and interest to code the application, slowing the design process some. The memory limitation meant that more dynamic packages with functionality like labels that appear when hovered over by a cursor could not be used. Alternative visualization options like Tableau Public were considered but data sharing requirements appeared to violate the NDACAN Terms of Use Agreement. Despite the tradeoffs required, we decided that the affordances of R, shiny, and the shinyapps.io hosting site fit the constraints and resource considerations of our project best.

8.2.4 Planning and Conducting Usability Tests

After building the initial tool prototype, we planned a usability test to gain insight into how well the tool worked in supporting data visualization needs of child welfare professionals. This involved brainstorming and refining several representative scenarios and tasks for child welfare research and policy professionals that would allow us to observe how they use and understand various aspects of the tool prototype. Guided by the template in Appendix D.1, the brainstorm and refinement process was a collaborative effort carried out over several weeks by members of the research team. Scenario 1 was designed to encourage an initial exploration of the tool, Scenario 2 encouraged answering a basic question that required manipulation of the tool, and Scenario 3 encouraged answering a more complex question that required manipulation of the tool to gather more than one piece of information. Additional considerations brainstormed by members of the research team included recruitment, demographic questions, and follow-up questions.

The usability tests were conducted virtually on the UserTesting.com platform, which helped to guide our recruitment plan. The platform directly recruits usability test participants based on specified inclusion criteria. The primary inclusion criteria for this study were (1) being located in the United States, (2) being at least 18 years old, (3) being comfortable with discussing in English, and (4) having a professional interest in the child welfare system, social services, and/or policy advocacy. Participants were compensated at a rate of \$1 per minute, and usability tests lasted anywhere between 30 minutes and one hour depending on the speed with which the participant completed all the tasks and answered all related questions. Prior to running any official usability tests, members of the research team pilot the tests with one another over Zoom. Test materials were then tweaked and finalized. See Appendices D.2 for the test script, D.3 for the template used to take notes on the tests, and D.4 for the consent form shown to participants at the beginning of each test. A pilot test on UserTesting.com was then conducted with a person meeting the inclusion criteria. This test went smoothly, so the results were included in the findings for the study. Including this pilot test, a total of 10 usability tests were scheduled between 5/26/2022 – 6/3/2022, with a moderator and one or two notetakers present at each. Four student members of the research team and I cycled through the roles of moderator and notetaker throughout the 10 tests. One of the usability tests had to be dropped due to technical issues and we were unable to reschedule, so our final set of usability tests on which we based our findings had a sample size of nine participants.

8.2.5 Analyzing Usability Test Results

After collecting data for each of the nine usability tests, members of the research team first evaluated the usability test notes through the creation of personas. These personas were largely meant for internal use as a way for us to better understand our target population and their needs. A draft example of such a persona created by a student on the research team can be found in Figure F.1 in the Appendix. We share this example noting that because persona-based narratives can and should include fictional details, personas can be an effective way to describe participants without deanonymizing them if researchers are diligent (Huynh et al., 2021). This process also familiarized the research team more generally with the usability test findings prior to a more systematic and action-oriented analysis of the test results.

This more systematic analysis involved members of the research team reviewing the usability test notes and enumerating a set of key findings for each participant. These key findings were then written on sticky notes for each anonymized participant on a Miro board and the research team

performed an affinity exercise to collaboratively group similar findings. Each group finding was summarized into a single description and then rated using an established scheme for rating usability findings (Hertzum, 2020, p. 70). Possible ratings for findings include *Critical* (i.e., problems that cause frequent catastrophes), *Major* (i.e., problems that delay or frustrate but eventually allow users to continue), *Minor* (i.e., problems that cause brief hesitation or uncertainty), *Bug* (i.e., incorrect functioning like spelling errors or dead links), *Idea* (i.e., missed opportunities), and *Positive* (i.e., features and qualities that should be preserved). Our results included one *Critical*, one *Major*, four *Minor*, nine *Idea*, and 15 *Positive* findings. There were likely no *Bug* findings because these were easier to catch in informal testing by the research team prior to the usability tests with participants. The 15 *Critical*, *Major*, *Minor*, and *Idea* findings were then prioritized based on my perception of their impact on the usability of the tool, and the top six were given a plan to be addressed based on feasibility. The 15 *Positive* findings are also presented separately in their own table.

8.2.6 Revising Visualization Tool Prototype

After compiling the list of six problem or idea findings deemed feasible for us to address, we began revision of the tool prototype. This involved updating the R code and the copywriting Word documents based on the feedback in these six findings. Before making changes related to each finding, I also reviewed the set of *Positive* findings to ensure that these changes did not remove or obscure any of the qualities that were indicated as aspects of the tool that should be preserved. This revision process took several months. After making each of these updates, we gave the tool the name *VizCare* and updated the URL so that the initial prototype created for the usability tests and the tool ready to be released to the public could be hosted and accessed separately.

8.2.7 Validation Survey of VizCare Tool

With *VizCare* ready for public release, the final step of the evaluation process involved collecting data on how useful members of the target population found the tool to be in a real-world context. To do this, we designed and disseminated a short validation survey related to use of the tool. Rooksby, et al. (2009) suggested that software testing “in the wild” should be seen as a socio-technical challenge so a lot of the consideration for this method was related to how to make the survey most likely to be filled out while still providing us the feedback we needed. Some of this involved making the survey easy to access, short and focused on the specific evaluation purpose, and disseminating through multiple channels of communication. The resultant survey was built in Google Forms and only five items in length (see Appendix E.1), with focus on the professional interests of the respondent and their perceptions of the tool’s usefulness. One of the items related to usefulness was on a Likert-scale and two were open-ended. After however long a user spent exploring the tool, the survey was short enough that it could be filled out in roughly one minute.

The timing and dissemination of the validation survey were also purposeful. The *VizCare* tool was made available to the public on 1/9/2023 and the survey was open for one month from 1/9/2023 – 2/10/2023. Professionals who had previously provided expertise helping us design the tool were contacted via email with our gratitude, notification that the tool was now available for their use, and a request to complete the survey. Flyers with information related to the tool and survey (see Appendix E.2) were also handed out at the Society for Social Work and Research conference between 1/11/2023 – 1/15/2023. This annual event is the largest social work research and policy focused conference in the US. The flyers were particularly disseminated at the three posters and

talks I was involved in presenting and at several Special Interest Group (SIG) meetings related to transition-aged youth. I also followed-up with email reminders after the conference to the listservs for these Special Interest Groups. Several colleagues and mentors also kindly shared the information regarding the tool and survey release with their own professional networks, including a group focused on national foster care policy. Finally, the survey was also linked at the top of the VizCare tool during that month in case anyone used the tool but had not received the survey request. Through these efforts we were able to receive 25 responses to the validation survey from child welfare professionals with a range of roles and geographic locations of focus in the US.

To analyze these responses, we first qualitatively coded all responses for each of the free response items in the survey. Responses could be subdivided into one or multiple sentence chunks, as responses often addressed multiple attributes of the tool. The three codes that could be applied to the responses include: *Positive Qualities* (i.e., positive feedback of tool attributes), *Immediate Fixes* (i.e., constructive feedback that could or needed to be addressed right away), and *Future Considerations* (i.e., constructive feedback that could be addressed in a future design iteration). For each code, we list all relevant quotes with the anonymized participant identification number associated with the response. We also present several charts and tables of descriptive statistics related to the categorical and Likert-scale items.

8.3 Results

8.3.1 Initial Prototype of Tool

The initial prototype of the data visualization tool can be found at the following link: https://uw-hcde.shinyapps.io/AFCARS_R_Shiny/. Please note that this link is different from the final VizCare tool link, which can be found in Section 8.3.4. The prototype of the tool linked above was the version evaluated in the usability tests.

As a brief overview, the general structure of the prototype is that there are three main pages: *Overview*, *AFCARS Data*, and *What's Missing?*. The tool begins on the *Overview* page, which provides information relevant to the tool, data, and project. The *AFCARS Data* page has three subpages representing different sets of AFCARS data elements: *Planning*, *Funding*, and *Outcomes*. Each of these pages has a left sidebar that users can manipulate to customize a set of inputs. At the bottom of that sidebar, the user can press a button to create or refresh a chart, which will be displayed in the blank space to the right of the sidebar. A button at the top of the chart can be pressed to download the chart into a PDF. On each of the *AFCARS Data* pages, there are also tabs at the top of the screen that can be clicked to access *Demographics* (i.e., definitions of the demographic variables used in each of the *AFCARS Data* subpages) and *More Info* (i.e., summaries and definitions of variables relevant to the current *AFCARS Data* subpage). Finally, the *What's Missing?* page describes some of the limitations of using administrative data like AFCARS and links to the FosterCommViz tool as an example of data visualization tool that uses more qualitative lived experience data.

8.3.2 Usability Test Results

Usability test results of the tool prototype linked and described above indicated that child welfare research and policy advocacy professionals found many elements of the tool to be useful for their work while still demonstrating ways that the tool could or needed to be improved. Half of the findings from the usability tests were *Positive*, indicating that certain features and qualities were

liked by participants and should be preserved. In particular, the overall structure and navigation of the site were received positively by a range of participants, including researchers, policy advocates, and people with limited experience working with data. The ability to play with the data, download plots into PDF format, filter by demographics and states, and the link to the FosterCommViz tool were all appreciated by participants. The content in the overview text, definition text, *What's Missing?* page, *Planning* page, and *Funding* page were all well-received too. See Table 8.1 for the full list of *Positive* findings from the usability tests.

Table 8.1 *Positive* findings from usability tests. This table shows 15 descriptions of findings related to the VizCare tool that indicate a certain feature or quality that should be preserved. These findings include all those given a *Positive* rating through the coding, affinity exercise, and rating process described in Section 8.2.5.

<i>Positive Findings</i>
Found the <i>Overview</i> text helpful, especially the discussion of how the data was cleaned
Found the definition text helpful
Found the user interface, dropdowns, and design very clear; Did not find the system to be overly complex
Like the content on the <i>What's Missing?</i> page
Plots were easy to download and the PDF format was appreciated
Tool resonated with policy advocates as useful for creating policy briefs
Found the ability to filter by demographics and states useful
Found the overall concept of showing <i>Planning</i> , <i>Funding</i> , and <i>Outcomes</i> to be good
<i>Planning</i> and <i>Funding</i> pages were easy to use and the charts were easily and correctly interpreted
Like how the tool provides easy access to and ability to interact / play around with AFCARS data; Good for data exploration
When applicable to relevant work tasks, participants indicated that they would frequently use for their work
Though hesitant at first, participants with limited experience working with data quickly got used to the tool
Helpful for determining representativeness in research studies
Appreciated the link to the FosterCommViz tool and the ability to look at non-traditional data; Found the FosterCommViz tool easy to use and interpret
Useful for presenting data to stakeholders

Despite these promising findings, the other half of the usability test findings indicated that some areas of the prototype tool could or needed to be improved. The one *Critical* finding indicated that the scatterplots on the *Outcomes* page were too difficult to interpret and should be replaced with either bar or line charts. This finding was as much conceptual as technical in nature, as participants seemed more interested in single variable representations rather than charts measuring the relationships between different variables. The one *Major* finding was that the location of definitions relevant to interpreting plots was not obvious. This issue could be solved by displaying the definitions closer to the plots on the same page so that they can be viewed simultaneously. An *Idea* finding similarly related to viewing content simultaneously was the suggestion of allowing the comparison of multiple charts side-by-side. Three other *Minor* findings relate to the presentation or content in text in each of the *Funding*, *Overview*, and *What's Missing?* pages.

These six findings were all feasible and high enough priority that were planned to be addressed in the next round of revision on the tool. Nine additional findings – primarily *Ideas* – were also noted but not planned to be addressed due to either issues of feasibility, limitations in the data or our agreed upon Terms of Use, or lack of clarity that the change would necessarily be viewed as an improvement by most people in the target population. The full list of constructive findings from the usability tests can be found in Table 8.2.

Table 8.2 Constructive findings from usability tests. This table shows 15 descriptions of problems or ideas related to the VizCare tool that might be addressed to improve it. These findings include all those given a *Critical*, *Major*, *Minor*, or *Idea* rating through the coding, affinity exercise, and rating process described in Section 8.2.5.

Priority	Rating	Finding	Plan to Address?
1	<i>Critical</i>	<i>Outcomes</i> page scatterplots are confusing and should be replaced with bar or line charts	Yes
2	<i>Major</i>	Definitions are not obvious to find and would ideally be displayed dynamically and/or on the same tab near the charts	Yes
3	<i>Idea</i>	Would like to be able to compare multiple charts side-by-side	Yes
4	<i>Minor</i>	Explanation of the national-level <i>Funding</i> chart should be updated to clarify that it is a set of states and that it is more useful for observing high-level trends than finding specific data points	Yes
5	<i>Minor</i>	<i>Overview</i> page should be reorganized / reworded to make it clear how to navigate to the rest of the tool and to emphasize the “What’s in the AFCARS tab?” information; Define or replace term “visualization”	Yes
6	<i>Minor</i>	Break the <i>What’s Missing?</i> page text into smaller chunks to improve ability to easily comprehend the main points	Yes
7	<i>Idea</i>	Provide the ability to download the underlying data	No
8	<i>Idea</i>	Provide county-level data	No
9	<i>Idea</i>	Find a government website to host the tool	No
10	<i>Idea</i>	Would like to be able to restrict the x-axis to a specific time period on each chart	No
11	<i>Minor</i>	Change the 14-17 age range to 14-18	No
12	<i>Idea</i>	Provide “hover over” descriptions	No
13	<i>Idea</i>	Add more variables of interest	No
14	<i>Idea</i>	Add pictures of young people to the tool	No
15	<i>Idea</i>	Allow the user to input and plot their own data	No

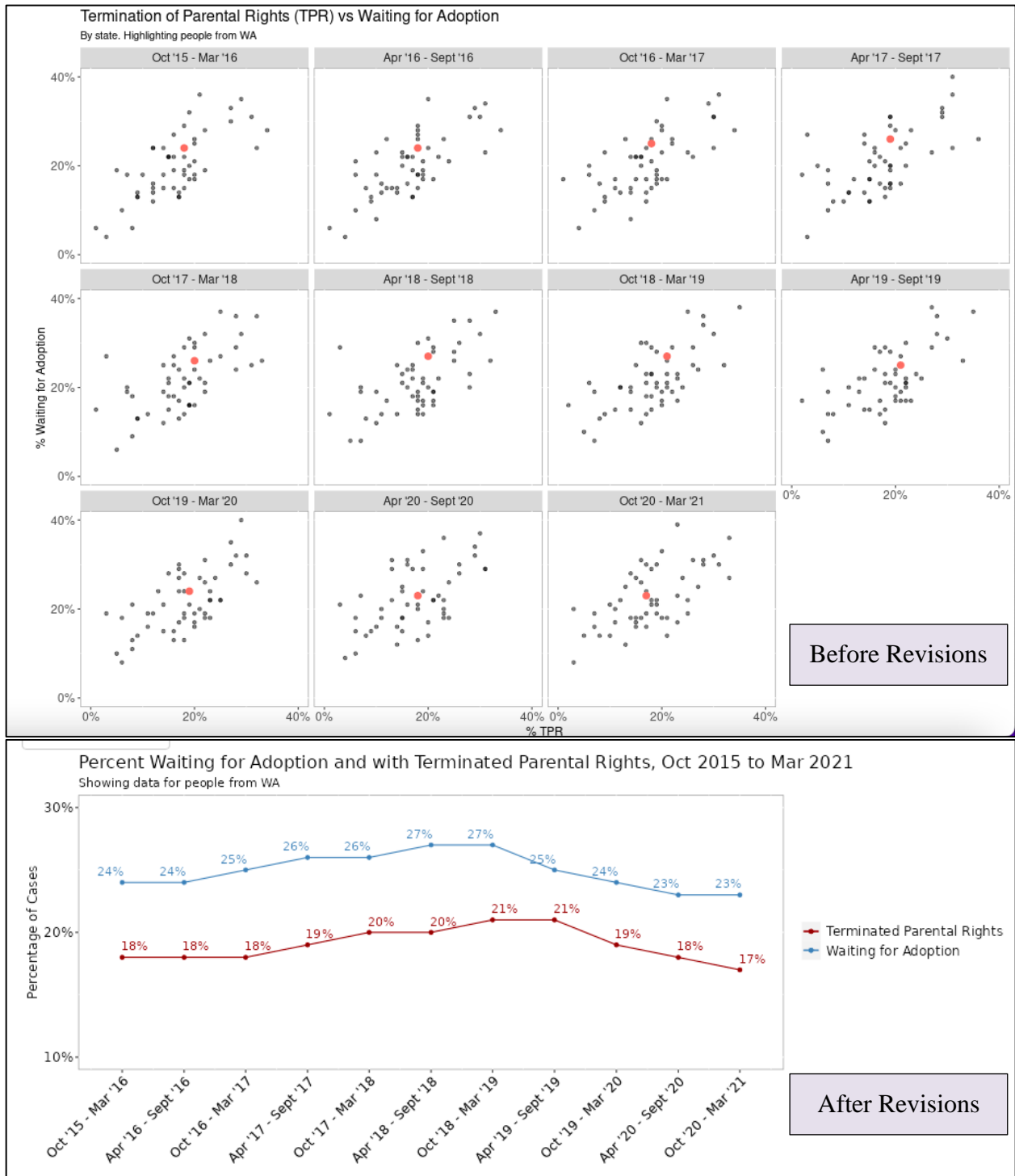


Fig. 8.2 Screenshots of example charts for the *Outcomes* page before and after the usability test revisions. The top charts show a small multiple series of scatterplots comparing the percentage of children who are waiting for adoption and who experienced termination of parental rights, with the dot representing Washington state highlighted in red. This chart was not easy to interpret or helpful for participants, so the bottom charts replaced it. The bottom chart shows the same information for Washington state in the form of two line charts.

8.3.3 Revised Prototype of Tool

Based on the usability test results, the tool was revised to address the problems and proposed new functionalities described in the top six findings in Table 8.2. The first change involved completely reworking the *Outcomes* page to display line charts of related outcome variables instead of the scatterplots in the original prototype (see Figure 8.2). This was the most complex of the revisions as it involved more of a conceptual redesign as opposed to just a functional or aesthetic one. The second change involved moving all the non-demographic definitions from the *More Info* tab to be displayed on the same tab as the plots. These plot-specific definitions are now displayed directly below the plots for which they are relevant. Relatedly, dynamic labels communicating information about the user-selected demographic, location, and content filters were included in the *Planning* and *Funding* pages and maintained in the new *Outcomes* page.

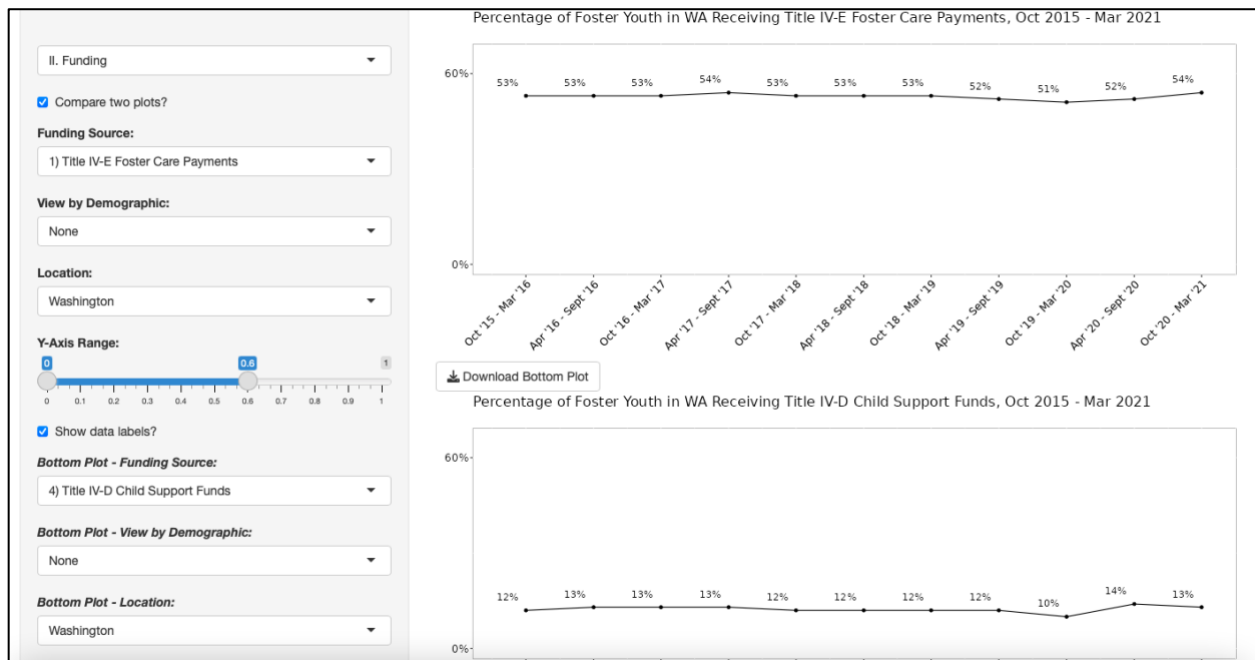


Fig. 8.3 Example screenshot of the new plot comparison function. Participants in the usability study indicated that the ability to plot two charts on the same page would be useful. This screenshot is an example of the new functionality, with a comparison from the *Funding* page of two plots of the percentage of foster youth in Washington state receiving two types of funding over time.

The third change included adding functionality that allows for multiple plots to be created on the same page for side-by-side viewing. This feature can be toggled on and off, and each plot can be customized. See Figure 8.3 for an example of the plot comparison feature. The last three changes involved reformatting and adding content to several of the bodies of text in the tool. One of these changes was to add an explanation of the national-level chart to both the *Funding* and *Outcomes* pages. These pages both have national-level charts that are a set of small-multiple line charts of each state, which had been causing some minor initial confusion among some participants during the usability tests. Another of these changes was to update the *Overview* page to colloquially define the term “visualization” for those who may not be familiar, explain how to get started using the tool, and reorganize the page so that the information about the *AFCARS Data* pages is more centrally located. Finally, the last of these copywriting changes involved reformatting the *What’s Missing?* page to explain more in bulleted chunks rather than paragraph form for readability. With

these changes, the tool was also given the name VizCare and assigned a new URL to reflect the tool name for public release.

8.3.4 Validation Survey Results

After revising the tool and producing the new link, VizCare was released for public use. An accompanying validation survey collected data for the first month and received 25 responses. When asked about the location most relevant to their current professional child welfare interests, 10 states, the District of Columbia, and national interests were all given as responses (see Table 8.3). When asked about relevant title(s) related to the tool, the majority indicated research / higher education (n = 18), with representation also coming in from people working on policy advocacy (n = 5), people with lived experience (n = 3), and administrative (n = 3) or field (n = 1) social workers (see Table 8.4).

Table 8.3 Locations of professional interest for validation survey respondents. This table shows the wide range of geographic locations across the US represented in the validation survey results.

Which location is most relevant to your current professional interests in the child welfare system?	Number of Respondents
National (U.S.)	6
Washington	6
California	3
Oregon	2
Arizona	1
Connecticut	1
District of Columbia (D.C.)	1
Florida	1
Georgia	1
Idaho	1
Illinois	1
New Jersey	1

Across each of these subgroups of professional and personal titles, the average rating that respondents gave in agreement to the statement: “I think this tool would be useful for some aspects of my work” was between 5.0 – 6.3 on a scale from 1 = Strongly Disagree to 7 = Strongly Agree (see Table 8.4). For all 25 respondents, the average useful rating given was 5.6, indicating positive perceptions of usefulness overall. The majority (n = 22) of the 25 respondents gave a usefulness rating of 5 or above, with just a few giving below average ratings (see Figure 8.4 for the full distribution).

Table 8.4 Titles of expertise for respondents to the validation survey. This table shows professional and personal titles of expertise in relation to the contents of the VizCare tool for respondents to the validation survey. Most respondents were researchers, with some also identifying with the titles of policy advocate, people with lived experience, and administrative / field social workers. Average ratings of the usefulness of the tool for their work were high across all titles.

Which title(s) related to the contents of this tool apply to you?	Number of Respondents	Percentage of Total Respondents*	Average Usefulness Rating^
Research / Higher Education	18	72%	5.6
Policy Advocate	5	20%	5.7
People with Lived Experience	3	12%	5.7
Administrative Social Worker	3	12%	6.3
Field Social Worker	1	4%	5.0
Total Respondents	25	100%	5.6

*Respondents could select multiple titles so percentages add to more than 100%

^Scale from 1 = Strongly Disagree to 7 = Strongly Agree

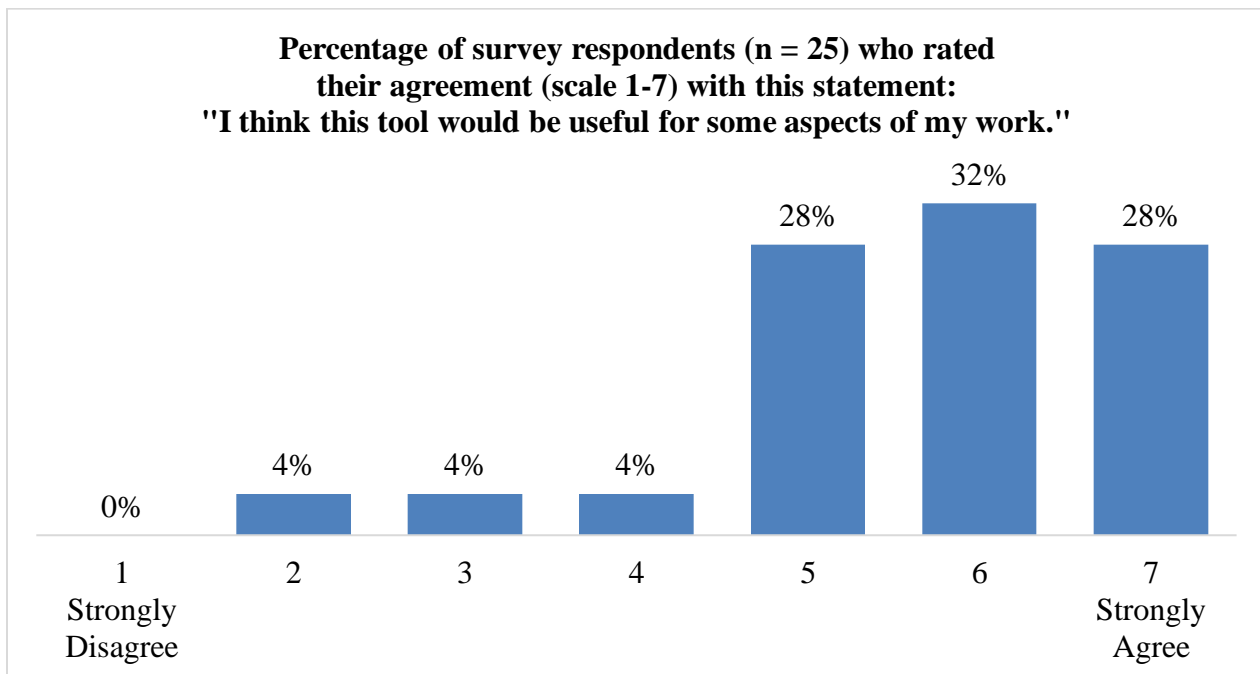


Fig. 8.4 Distribution of validation survey respondent ratings of VizCare tool usefulness. This chart indicates that many people in the target population find the tool useful for their work. Of total respondents (n = 25), a large majority (n = 22, or 88%) rated their agreement with the tool being useful for some aspects of their work to be 5 or higher on a scale from 1 = Strongly Disagree to 7 = Strongly Agree.

In addition to these respondent background and quantitative assessment items, the validation survey included two free response items. One asked to explain the usefulness rating and the other provided an opportunity to give any additional feedback. The responses to these items were coded

into *Positive Qualities*, *Immediate Fixes*, and *Future Considerations*. The *Positive Qualities* covered many aspects of the VizCare tool and indicated that many participants were excited about using the tool going forward, especially to inform policy work. In particular, the content in the *What's Missing?* Page, the red dotted national average line on the *Planning* page charts, site navigation, the ability to breakdown data by state and demographic characteristics, the chart comparison function, the ability to quickly play with data, the visual nature of the data displays, and the ability to download plots were all mentioned as helpful by respondents. The *Immediate Fixes* covered two places where a small amount of additional text could help with clarity and one issue related to the data displays on the *Outcomes* page. For the data issue, the respondent claimed the data were incorrect (and correspondingly gave the lowest rating of 2 out of 7), but upon further review the issue seems more likely to be that percentages less than 0.5% were rounding down to 0%. Unfortunately, we have no way to follow up with the respondent to verify this. However, I confirmed that the low value was accurate to the data in the #257 AFCARS data file, so this would indicate an issue with the raw data rather than the tool itself, which the VizCare tool facilitated the respondent to identify. The *Future Considerations* covered the importance of understanding how often the tool could be maintained with the latest data, the need for technical testing to understand compatibility with various browsers and VPNs, a desire for additional features or content, and a few instances of respondents not finding certain aspects of the tool to be useful. In each of these instances of disliking aspects of the tool, other respondents specifically called out those aspects as being positive qualities of the tool. The full lists of bulleted quotes with accompanying anonymized participant identification numbers for each of these three categories are available for review below.

Positive Qualities:

- “Well done. I just ran a few reports and found it easy to use. It’s a bit like the Data portal that [organization] used to have on our website... it’s run by [different organization] -- and they are working on getting ongoing funding to keep it updated (an ongoing challenge...)” – P1
- “The ‘What's Missing?’ section is both brilliant and needed. Thanks for including it!” – P2
- “I really like the ability to compare and quickly see the difference between the state and national averages.” – P2
- “This is a phenomenally powerful tool for policy!” – P2
- “I LOVED this! ... I have [emailed to] a bunch of internal colleagues to help inform their work. We are about to be visiting some states and this is good to get the basic lay of the land. Good job. I would send this to the data teams that are in different states.” – P3
- “It's nice to quickly and easily be able to see a breakdown of key child welfare data by state and demographic characteristics. It's useful to be able to compare state data to the national average and to compare demographic groups with one another. The data is easy to interpret and the site is easy to navigate.” – P6
- “I really liked the tool especially the dotted redline for the national average.” – P8
- “I appreciate the ability to download the plots.” – P9
- “We use AFCARS data to support problem statements or progress. This would assist in getting state specific data efficiently specifically around planning and outcomes” – P10
- “It is a helpful way to view the data and develop and explore research interests and questions.” – P11

- “Incredibly helpful to see the state data compared to national data/trends when preparing peer reviewed studies or policy briefs. Thank you! Amazing work.” – P14
- “I love the chart comparison function.” – P15
- “Nice tool. Great to show students who are trying to understand basic child welfare trends” – P16
- “For someone in a role like mine, having trending info about outcome information that I could get to in a matter of seconds was much easier than trying to retrieve that info from CFSRs, PIPs etc or having to wait for someone at the state to pull and send it.” – P18
- “Fairly intuitive web application and clear graphics.” – P19
- “accessing the data in a way to view is hugely helpful rather than just raw data” – P20
- “Our state has a data portal, but it is clunky compared to this. I can see using this to very quickly get state versus national data for grant proposals or internal agency presentations - this is very easy to use and I can definitely imagine returning to it in the future (I bookmarked the link!).” – P21
- “The large trends in data from AFCARS can really inform research directions for better services and interventions with foster youth, which informs the research I am a part of, and this tool makes it visually accessible.” – P23
- “I really appreciated the ‘What's Missing?’ part of the dashboard acknowledging the limitations of administrative data and the erasure of sexual and gender minority youth.” – P23
- “I can see us using this data to inform our policy work and to make the case in our advocacy efforts.” – P25

Immediate Fixes:

- “Dropdown menu- add a ‘site navigation’ header” – P6
- “Add a note saying that percentages are visible in the trends when you select an individual state. The national map provides only trend lines.” – P7
- “The data are incorrect. I looked at the outcome which shows entries, exits, and youth who age out and the graph showed zero youth aging out.” – P17

Future Considerations:

- “A few times, I got an error message: ‘Disconnected from the server’ in the bottom right hand corner. Was that a time-out or a product of my being on a VPN?” – P2
- “I would have rated this a 7 if it was possible to see the number of people in each cell and to pull the visualized data into an excel table format” – P6
- “It would be nice if the data was presented in order of prevalence” – P6
- “It would be MUCH more useful if the red statistics matched the criteria that are selected. For instance, in the example I gave above, it would be useful to see outcomes in red (nationally) for Black/African American youth between the ages of 18-21.” – P7
- “I would like to have the ability to put in a date parameter.” – P8
- “The data is a bit hard to read because the colors are very similar” – P9
- “It could be helpful to view the plots you are comparing together on the same graph.” – P11
- “This tool is cumbersome. The data options are limited and not useful in comparing groups or states.” – P13

- “I am wondering if I can tell how many TAY are in care nationally, and the percentage of each by state. I wasn't sure if I could generate those data. This could very useful for to do all ages/genders/ethnicity.” – P14
- “Might be helpful if additional, critical information related to permanency planning could be visualized too.” – P15
- “Also, the graphs would be much more useful if you could compare two groups on the same plot (e.g., White vs Black youth) rather than having to look at two plots. Finally, it would be helpful to add additional "outcomes" such as current placement type.” – P17
- “Usefulness would depend on how often the data can be updated.” – P19
- “if the advocacy community gets used to using this resource, it will be important that it is maintained and up to date as advocates need to be able to reference the most recently available data” – P24

8.3.4 Final Prototype of Tool

With the results of the validation survey, being largely positive, the decision was made to continue to allow public access to the VizCare tool while a few minor revisions were made. In particular, the feedback categorized as *Immediate Fixes* from the validation survey results were quickly incorporated into the tool. The first change was to add a header to the main dropdown menu with the descriptor “Site Navigation.” The second change was to revise the national-level chart explanations on the *Funding* and *Outcomes* pages to further clarify their purpose as observing trends, with the state-specific plots being more useful for discerning details in the data. The final change was to update the rounding of percentages on charts so that values greater than 0% but less than 1% are now labeled “< 1%” and values greater than 99% but less than 100% are now labeled “> 99%.” With these changes, the VizCare tool was finalized until potential future updates. Screenshots of each of the main pages for the final version of the VizCare tool can be found in Appendix G, along with screenshots of the main pages of the FosterCommViz tool. The VizCare tool itself can also be accessed at the following link: <https://uw-hcde.shinyapps.io/VizCare/>.

8.4 Discussion

These results indicate that the VizCare tool is useful for many child welfare professionals who want to use AFCARS data visualizations for research and policy advocacy work. Basing the initial prototype of the tool in the expert interview findings from Chapter 7 allowed us to start from a point of understanding with the people who are its intended users. The usability tests confirmed this, as half the findings were positive elements of the prototype that we confirmed were valuable for us to keep in the next iteration of the tool. Of particular note is that the overall concept of the tool was very well received. By engaging meaningfully with our intended users before any work had begun, we were able to pour our efforts into building a tool that could indeed meet certain of these professionals’ data needs and facilitate action that was both difficult and of interest to many members of this group. This quality of facilitation through involvement aligns with the known affordances of user-centered design methods (Abrams et al., 2004). While the initial involvement helped us align the general concept of the prototype with participant goals, the usability tests allowed us to further involve participants so we could address the details of these concepts with more precision. Through these usability tests, we were able to learn that line charts and bar graphs are more effective and useful for many child welfare professionals than scatterplots. We were also able to gain insight into the importance of precisely defining what the data shows in a way that can be immediately referenced while interpreting a chart, and that we should provide a mechanism to

view multiple charts simultaneously. These findings allowed us to refine the tool to a point of feeling confident in releasing it to the public. Participant involvement remained important at this final stage as well though. Through the validation survey, we were once again able to engage our intended audience to receive meaningful feedback, this time in a less structured, real-world environment. Our findings from the validation survey allowed us to quickly make a few important adjustments to the tool in order to ensure its accuracy and efficacy. With these minor adjustments and the abundance of positive feedback we received, the validation survey allowed us to confirm that the user-centered design process facilitated the creation of a tool that met many child welfare researcher and policy advocate data visualization needs. In addition, the survey provided us with a set of additional feedback that we can use to improve this tool or create new tools. This will provide a jumping off point for future work to continue to be shaped by participant involvement and remain relevant to real-world needs.

Before getting into future work, it is important to note that this user-centered design process resulted in the creation of a foster care data visualization tool that has meaningful differences from those that presently exist on the internet. The two most notable differences between this tool and other AFCARS data tools that we are aware of include: (1) the ability to customize and aggregate data by demographic characteristics within different geographies and (2) the deeper discussion of the data, including its strengths and weaknesses. The first of these makes it much easier for researchers and policy advocates with or without data analysis expertise to quickly explore the AFCARS dataset for disproportionalities and disparities in outcomes, which are known to exist in the system (Miller et al., 2013). The ability to understand and track these disparities over time can provide important feedback to policymakers on the efficacy of policies, especially those localized to a particular state when considering expansion to the federal level. The tool is especially valuable in being able to consider intersectionality of multiple demographic characteristics to deepen empirical understandings of the experiences of individuals in foster care with multiple marginalized identities (Williams-Butler et al., 2020). The second notable difference is related, as it can help researchers and policy advocates to understand the data that they are intending to use. For example, the lack of gender and sexuality data available in AFCARS data makes it impossible to understand and track disparities related to those identities, despite evidence of significant inequities for people with minoritized gender and sexual identities in the foster care system (Grooms, 2020; Paul, 2020; Wilson et al., 2014). By engaging with intended users of the VizCare tool at the beginning, middle, and end of the design process, we were naturally guided toward the development of a tool that helped child welfare professionals fill a gap in functionality and content within the general concept of an AFCARS data visualization tool. As this new functionality and content is especially useful for understanding equity-related questions that pertain to policy, this is evidence in support of taking a user-centered design approach to meet the need of improving how research evidence can be shared with policymakers (Crowley et al., 2021a; Crowley et al., 2021b; Colby et al., 2008). As in this case, user-centered design methods would be especially relevant for designing products aimed at any group of researchers and policy advocates who are interested in communicating evidence to impact policy but are confronted with some roadblock (e.g., insufficient time or technical expertise necessary explore a dataset) making that more difficult.

While the VizCare tool was found to be useful for many of the participants in our study, considerations for future work in this area were also identified. One consideration for the VizCare

tool is an expansion of the functionality and data elements included in the tool. Examples of suggested additions include a date parameter, the ability to compare two sets of data on the same plot, and more AFCARS elements related to permanency planning. Another consideration for the VizCare tool is the importance of maintaining and updating the tool. Participants pointed to this as a key area of concern and something that has been an issue with other similar projects in the past. The nature of the tool being free to build and host means that labor costs, technical expertise, and access to the data through continued adherence to the NDACAN Terms of Use agreement are the primary concerns in this area. Finally, another area of future work could be to create similar tools for data from one or more additional data sources, or to link datasets in the same tool as suggested in our interviews with professionals. Two examples of datasets that could be relevant for future projects would be data from the National Child Abuse and Neglect Data System (NCANDS) and the National Youth in Transition Database (NYTD). In addition, while several people with lived experience in foster care were included as participants in this study, providing more opportunities for people with lived experience to be engaged in the interpretation and implementation of findings during the design process itself would be a goal for future work to ensure that the tool is meeting the needs of the people being advocated for in addition to the child welfare researcher and policy advocates. Also, while this study provides evidence that the visualizations created via the VizCare tool are useful for impacting policy from the perspectives of many child welfare professionals, future research could explore how policymakers perceive the visualizations created by the tool. Ensuring that the visuals are understandable and useful from their perspective is necessary for policy change to occur.

8.5 Conclusion

This chapter provided insight into the user-centered design process of the VizCare tool, an AFCARS data visualization tool for professionals working on child welfare research and policy advocacy. Using interviews, usability tests, and surveys, the design of this tool was shaped by participant involvement throughout the design process, resulting in a tool that was found to largely meet the needs of the target population in facilitating the communication of visual data evidence to impact policy. Future research and design work in this area should include maintenance and updating of the VizCare tool, the addition of functionality and other AFCARS data elements to the tool, and the addition or development of a similar tool with other related datasets like NCANDS and NYTD. Additional research could also explore the usefulness of the visualizations produced by the VizCare tool for policymakers in their work.

Ch 9: Conclusion and Future Work

9.1 Conclusion

In this chapter, I conclude my dissertation and describe some opportunities for future work. I begin by providing a short, high-level overview of the primary research findings from each chapter and how they relate to digitally-mediated aspects of the transition to adulthood out of the foster care system. Then, I describe the contributions of this work along with how those contributions address the motivating research questions from Chapter 1. Finally, I describe several avenues of future work in this area.

The first digitally-mediated aspect of the transition to adulthood from foster care that this dissertation considers is the use of online communities by people with lived experience in foster care. The studies in Chapters 4-6 are all related to this topic. The findings from Chapter 4 tell us which topics are relevant to a group of people in an online community centered on the experiences of people who have spent time in foster care. In part, this chapter's findings indicate that topics of interest to traditional social work researchers (predominately risks and protective factors) are indeed noteworthy to people with lived experience. However, a large set of topics (predominately relationships, group affiliations, and day-to-day considerations) were also found to be important to people with lived experience, indicating that a wider range of topics are deserving of greater attention from researchers. This study also outlines the complex ways that these many topics co-occur in conversations by people with lived experience in the community. The findings from Chapter 5 provide evidence that people with lived experience discuss topics of importance to the transition to adulthood in ways that are distinct from people who have not spent time in the foster care system. Within posts by people with lived experience, risk and protective factor topics were found to be discussed with more negative sentiment and personal disclosure, while topics that move beyond basic needs were found to be discussed with more diversity in sentiment and speech acts. Chapter 6 – the third and final online community study – indicates that people with lived experience in foster care discuss topics of legal, relational, and cultural permanency more frequently than people who have not spent time in foster care. In more specific terms, people with lived experience were found to focus on aging out, religion, holidays, friends, being alone, and community more than others. People with lived experience were also found to discuss permanency-related topics in ways that indicate help-seeking behavior compared both to other people and to their own discussions of non-permanency-related topics. This confluence of findings from these three online community chapters provides valuable insight related to digitally-mediated aspects of the transition to adulthood out of foster care. This research also points to online communities as spaces that people who are experiencing or have experienced this transition might turn to for support and connection, indicating that researchers have a lot to learn from these online experiences to ensure research better supports both online and offline elements of the lives of people who have spent time in foster care.

The second digitally-mediated aspect of the transition to adulthood from foster care that this dissertation examines is the use of online data visualization tools by people doing foster care research and policy advocacy. The studies in Chapters 7-8 focus on this topic. The findings from Chapter 7 indicate that child welfare research and policy advocacy professionals would like to have access to customizable and interactive data visualization tools that are accessible for people with limited technical expertise. We found that these professionals are interested in visualizations of both administrative and lived experience data displayed in simple, colorful, and humanized

ways that can be disaggregated at geographical levels that are meaningful to impacting policy. Based on these findings, the work in Chapter 8 resulted in the creation of a tool called VizCare that fit these descriptions. The findings from Chapter 8 indicate that many child welfare professionals do indeed consider the VizCare tool useful for creating data visualizations that can be communicated through foster care research and policy advocacy work. By involving community participants throughout the stages of tool development, the user-centered design process allowed us to build a tool that was validated to meet many child welfare professionals' needs related to the digital facilitation of visually representing foster care data to impact policy.

The first decades of the 21st century have seen an adoption of digital technologies by society that has transformed the way that most Americans work and live. Like much of society, people with lived experience in foster care are using the internet for a variety of social, emotional, and pragmatic reasons. Like public health professionals' use of data visualization dashboards during the Covid pandemic, child welfare professionals want to be able to use digital tools to quickly explore important foster care data in order to help inform important research and policy decisions. Both of these digitally-mediated aspects of the transition to adulthood out of the foster care system are part of larger digital trends in life and work today. My hope is that the findings and contributions from this dissertation can serve as a springboard to cultivate and invest in future interdisciplinary partnerships between engineers, people with lived experience in foster care, and child welfare researchers and policy advocates to work together on addressing new and ongoing digital challenges and needs related to both the transition to adulthood from foster care and child welfare more generally.

9.2 Contributions

To summarize the key work of this dissertation, I will address how the contributions of the research help to answer each of the five motivating research questions. For reference, these research questions are described in Section 1.2. The contributions of this work come in a variety of areas, including empirical, methodological, artifact, and policy and translational contributions.

- 1) How can research of online communities be informed by and supplement traditional social work research on the online experiences of people transitioning to adulthood out of the foster care system?*

RQ1 is addressed with the study described in Chapter 4. An empirical contribution from this study is that it validates and extends an established descriptive framework of domains of outcomes that are relevant to young people during the transition to adulthood from foster care. The validation aspect of this contribution demonstrates how traditional social work helped to inform online community research to better understand the online experiences of people transitioning to adulthood from foster care. In addition, the extension of the framework to include a larger set of domains relevant to the outcomes of the transition to adulthood shows how online community research can help to supplement traditional social work understandings of the transition period. As a whole, this contribution indicates that basing online community methods in more specific child welfare knowledge can help to enhance the insights on both fronts. A related contribution from this study is methodological, including the application and adaptation of the observational study of online communities to child welfare topics. An important part of this contribution is understanding how to ethically use public online data for research purposes. By carefully outlining

these considerations in our study, we provide guidance to other researchers on how they might ethically and effectively carry out similar methods to address related research questions. Finally, this study includes an artifact contribution as well. The heatmap of the co-occurrences of domains can help to guide traditional social work researchers in their consideration of additional research questions to explore. This contribution provides a practical and efficient means of communicating our empirical findings back to the social work research community to help supplement and encourage deeper understandings of the transition to adulthood out of foster care.

2) *How can research of online communities inform policies related to the online experiences of people transitioning to adulthood out of the foster care system?*

RQ2 is addressed with the study described in Chapter 5. The empirical contributions from this study include quantitative findings that the sentiment and types of speech acts used by people with lived experience differ from those without when discussing topics of importance to people during the transition to adulthood, and that there exists a diversity of sentiment among people with lived experience when discussing topics that move beyond basic needs. These contributions can help to underscore the unique, multiple perspectives of people with lived experience. Like the study associated with RQ1, this study also has a methodological contribution related to applying and adapting the observational study of online communities – including ethical considerations – to the area of child welfare. This study was oriented more toward a social work audience than the first one, making it a better model for social work researchers on how to apply these methods. This study also has an artifact contribution in the FosterCommViz tool, which allows others to visually explore the data from this study in an aggregated and interactive way. This contribution allows others to create visualizations of lived experience data in a way that protects individual privacy and that might be used as evidence to help inform policies related to the online experiences of people transitioning to adulthood out of the foster care system. Finally, this study also has a more direct policy and translational contribution through the specific recommendations we provide in the policy implications section of the chapter. This policy contribution in particular serves to directly address this research question.

3) *How can research of online communities inform policies related to the offline experiences of people transitioning to adulthood out of the foster care system?*

RQ3 is addressed with the study described in Chapter 6. The empirical contributions from this study include evidence for which permanency topics are most commonly discussed by people with lived experience, how people feel about those topics, and how these topics and feelings compare to those expressed by others. These contributions provide evidence related to the lived experience perspective of permanency, one of the most important offline experiences of people transitioning to adulthood out foster care. Like the previous two studies, this study also has methodological contributions as it similarly outlines how to ethically apply and adapt observational online community study to child welfare-focused research. This can enable other social work researchers to employ similar methods to further address this broad research question. Additionally, this study addresses the research question more directly through a series of policy and translational contributions. This study provides specific policy recommendations related to each of the areas of legal, relational, and cultural permanency, and it also contributes with several recommendations for social work practice too. This in-depth translation of the study's empirical findings into detailed

implications for policy and practice provides a model for how research can be communicated to better inform policies related to the transition to adulthood from foster care.

- 4) *How can the data visualization interests and needs of professionals in the child welfare space be supported?*

RQ4 is addressed with the study described in Chapter 7. The empirical contributions from this study include the aspects of visualizations and interactive tool functionalities that are preferred by child welfare experts working in the research and policy space. These contributions resulted in a set of data interests and needs that describe the types and characteristics of child welfare data that child welfare professionals would like to see visualized. The contributions also resulted in a set of user experience interests and needs that describe the functionalities and characteristics related to the visualizations that these professionals would like to use to explore that data. By describing these empirical findings in this way, this study articulates both the “data” and “visualization” aspects of how data visualization can be supported for child welfare professionals. This allows for future child welfare data visualization design (including the tool described in the next study) to be grounded in the real needs of the people who plan to use the visualizations.

- 5) *How well can a user-centered designed, interactive research tool support child welfare researchers and policy advocates with their data visualization needs?*

RQ5 is addressed with the study described in Chapter 8. The empirical contribution from this study includes a refinement and deeper understanding of the data visualization preferences of child welfare professionals that was uncovered in the previous chapter. This refinement helped to address the quality of the user-centered design approach posed in this research question, indicating that such an approach can be an effective way of developing a tool that truly meets user needs. A related contribution of this study is a methodological one, as it clearly outlines the user-centered design approach – with emphasis on iterative engagement with participants from the target audience population – as a way to develop additional data visualization tools in the areas of social work and child welfare. Answering this research question also resulted in a significant artifact contribution with the creation of the VizCare tool, which can continue to be used by child welfare professionals to meet certain data visualization needs. As this tool was oriented toward creating data visualizations that can be communicated to policymakers, this work also points to a form of policy contribution that can have an ongoing impact as other researchers and policy advocates make use of the tool.

9.3 Future Work

While this dissertation resulted in multiple useful contributions to the field, there are many related areas of future work that remain to be explored. I will start by proposing several areas of future work related to the study of online communities and social media. While this dissertation provided several empirical assessments of one online community, the field would benefit from studies that look at additional platforms and other social uses of the internet by people with lived experience. Variations in methodology for collecting empirical data related to online interactions would also add to the field. In particular, methodologies that allow for people to share demographic characteristics with the researchers would be helpful for understanding the representativeness of

these findings and how online experiences of people with lived experience in foster care may differ based on aspects of a person's identity like age, race, ethnicity, gender, and sexuality.

In addition to more empirical work on online communities, future work could include the design and development of a non-commercial online community that can meet the needs of people with lived experience in foster care. Current options like Reddit and Facebook are not designed or incentivized to meet the nuanced needs of people who have spent time in foster care. Non-profit organizations would be better suited to co-design safe and effective online spaces for foster youth and adults who have transitioned out of foster care into adulthood.

At the same time, children and youth are bound to continue using the internet, including commercial platforms that may not have their best interests at heart. Future work should consider using empirical evidence, technology and child welfare expert knowledge, caregiver and child welfare staff concerns, and the expertise of people with lived experience in foster care to construct trainings that can guide caregivers and child welfare staff on how they can support children and youth in safe use of the internet and digitally-mediated technologies. These trainings should be co-designed with members of each of these populations to build on each group's knowledge and perspectives. These trainings should also be evaluated to understand how effective they are and if there are areas in which they should be approved prior to wider dissemination.

Another area of future work relates to the amplification of voices of people with lived experience in foster care to better guide research and policy related to the child welfare system. While this dissertation attempts to amplify these perspectives, this work could be done much more directly if there existed a well-designed mechanism for people with lived experience to provide feedback and share their stories to a trusted source. An easy-to-use, online tool that would allow people with lived experience to voluntarily share their perspectives could be co-designed by engineers, policy advocates, researchers, and people with lived experience in foster care to facilitate this form of democratized civic engagement.

Related to the use of lived experience data are ethical considerations that should guide that use. In this dissertation, I have taken general ethical guidelines around public online data and adapted them to considerations specific to people with lived experience in foster care. However, it would be better if people with lived experience had more control over such data use. Similar to the way that universities establish Institutional Review Boards to govern research practices, a group of people with lived experience could help to establish guidelines and requirements of data use from the perspectives of the people associated with that data. Such a lived experience review board could be designed and implemented to help govern or make recommendations related to the use of any repository of lived experience data.

Moving into the area of online data visualization tools, some future work relates to the VizCare tool itself. This tool should be regularly updated with new data and the types of functionality and data elements included could be expanded based on the future considerations findings from the usability tests and validation surveys collected in Chapter 8. This tool was built without financial resources, which was subject to certain constraints. If ongoing funding can be secured, a re-evaluation of how the tool is built, what it includes, and where it is stored might be appropriate.

In addition to updating and expanding the VizCare tool, future work can also include the development of other public data visualization dashboards based on a wider range of datasets. Lived experience data, social work research survey data, and other administrative data (like the National Youth in Transition Database) could be incorporated into tools that follow the same data visualization guidelines as outlined in Chapter 7. Like in Chapter 8, these new tools would ideally be created with iterative participation from the people who are intended to use them. If intended for communicating to policymakers, evaluation of a tool's effectiveness with a policy audience would also be an important step to ensuring that the visualizations are interpretable and effective for the people who have the power to write and pass the policy itself. In addition, greater participation from people with lived experience in the development process would be an important step to ensuring that the data being used to create policy is truly reflective of the interests and needs of people with lived experience.

Much of this future work points to the value in collaboration of engineers, designers, people with lived experience in foster care, child welfare professionals, caregivers, families, child welfare staff, and policymakers. Cultivating and investing in these partnerships is vital to the success of this work. In particular, people with lived experience should be centered in this work and a variety of lived experience identities and perspectives should be included. This value should also be recognized by paying people with lived experience for their expertise.

There is much important work to be done related to digitally-mediated aspects of the transition to adulthood from foster care and other child welfare topics. This dissertation has served as a starting point. I look forward to working with many others and seeing the work of other human-centered design and engineering researchers as we continue to envision a better future with and for children, youth, and families.

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Appendices

Appendix A: New Domains Derived from Qualitative Coding Process

A.1 Relationships

There are five new domains that fall under the category of “Relationships.” See Table A.1 below for descriptions of each new domain in this category.

Table A.1 Descriptions of each of the new “Relationship” domains of *Courtney’s Domains*.

New Domain	Description
Foster Relations	This domain includes relationships between people who have spent time in the foster care system. It can be related to getting to know and learning from others with similar experiences. It can also be related to interest in developing these sorts of relationships. Also, these relationships can be online or in-person.
Social Worker Relations	This domain is related to relationships that people have with social workers. This can include individual case workers, CASAs, GALs, and people with more bureaucratic positions. These comments often include descriptions of how specific social workers either helped or did not help an individual during their time in the system.
Romantic or Sexual Relations	This domain is related to romantic or sexual relationships. This can include an interest or fear in a relationship like this, as well as real life experiences. Unlike the Family Formation domain, this domain does not necessarily require a long-term or family-oriented relationship to develop.
Other Relations	This domain is related to other relationships that do not fall under the categories of Family Relations, Family Formation, Foster Relations, Social Worker Relations, or Romantic or Sexual Relations. Some examples might include general friendships, relationships with neighbors or others in the community, and interest in generic social support. This domain is broad and meant to catch all relationships that have not been classified by other relationship-oriented domains.
Holidays	This domain includes anything related to holidays. This might include traditions, coping mechanisms to get through holidays, or who a person wants to spend time with during holidays. These comments often relate to how family and social dynamics shape holiday experiences.

A.2 Group Affiliations

There are four new domains that fall under the category of “Group Affiliations.” See Table A.2 below for descriptions of each new domain in this category.

Table A.2 Descriptions of each of the new “Group Affiliations” domains of *Courtney’s Domains*.

New Domain	Description
Identity Factors	This domain includes topics that are related to a person’s identity and experiences based on that identity. Some concepts that come up in this domain include religion, sexuality, gender, race, culture, and names. These comments often include descriptions of discrimination based on these identities, as well as celebrations related to these identities.
Representation in Media	This domain is related to people with lived experience in foster care and other parts of the foster care system as they are depicted in media. These media can include newspaper articles, movies, television, books, and other forms of published or official communication. It also includes generally how people with lived experience want to be represented to the public.
Foster Care System Experiences	This domain includes depictions of the foster care system as an entity. These comments often discuss impacts, experiences, and the quality of care provided by the system as a whole. They also might discuss concepts related to aging out or adoption and no longer being part of the system. The key difference between this and other domains is generality and abstraction to the level of the system rather than more specific individual or group levels.
Military Involvement	This domain is related to involvement in the military. This can include deployment, interest in joining the military, or benefits or detriments of military involvement. It can also include personal involvement or the involvement of others.

A.3 Day-to-Day Considerations

There are six new domains that fall under the category of “Day-to-Day Considerations.” See Table A.3 below for descriptions of each new domain in this category.

Table A.3 Descriptions of each of the new “Day-to-Day Considerations” domains of *Courtney’s Domains*.

New Domain	Description
Internet	This domain is related to online engagement and general reference to or use of the internet. A common example would include reference to Reddit and often this particular online community. Other topics might include internet access and literacy.
COVID	This domain is related to COVID-19. Data collection ended in late March 2020 so some posts began mentioning COVID toward the end. These comments discussed things related to the virus itself as well as ramifications on other areas of life due to shutdowns.
Food	This domain includes anything related to food. This can be wide ranging and includes topics like food insecurity, favorite recipes, and knowing how to cook. It also includes how to access food and the effects of having that access limited.
Life Skills	This domain is related to practical considerations and topics important to negotiating tasks important to daily life and basic needs. It can include desires to learn more about life skills, as well as advice or descriptions of how to navigate institutions. This domain often discusses obtaining personal records and other resources.
Transportation	This domain is related to any form of transportation from one location to another. These can include public and private forms of transportation like buses, cars, bicycles, and walking. The comments are often related to access and affordability of these means of travel.
Recreation	This domain is related to things that people do for fun or enjoyment. Examples of this might include forms of exercise, gaming, or going to events. It might also include interest in these sorts of behaviors.

Appendix B: AFCARS Data Elements

B.1 AFCARS Data Element Table

Table B.1 AFCARS data elements used in VizCare tool. These 24 data elements from dataset #257: “AFCARS Foster Care File, 6-month periods (FY2016A – 2021A)” were included in the cleaned dataset used to construct the tool.

AFCARS Data Element Number	AFCARS Data Element Name
5	State Two-Character Code
10	Child Sex
17	Child Hispanic or Latino Ethnicity
27	Total Number of Removals from Home
32	Number of Placement Settings in Current FC Episode
51	Most Recent Case Plan Goal
78	Title IV-E Foster Care Payments
79	Title IV-E Adoption Assistance
80	Title IV-A TANF Payment
81	Title IV-D Child Support Funds
82	Title XIX Medicaid
83	SSI or Social Security Act Benefits
84	Only State or Other Support
86	Length (Days) Since Latest Removal
87	Length (Days) in Current Placement Setting
92	Age of Child at the End of 6-mo Period, or at Exit
95	Entered Foster Care During the 6-mo Period
96	Child was Discharged from Foster Care During the 6-mo Period
97	Child was in at Start or Entered FC During the 6-mo Period
98	Child is Waiting for Adoption
99	Parents Rights Have Been Terminated
100	Youth is No Longer Eligible for Foster Care Due to Age
102	Derived Race
106	End Date of the 6-Month Period

Appendix C: Initial Visualization Tool Design

C.1 Outline of Initial Visualization Tool Design

“Welcome” tab (UX Design 1)

- Description of the project and motivations (based on [affinity exercise](#) and [expert user interviews](#))
- What is AFCARS? (based on [AFCARS 6-month data file user guide](#))
- Data cleaning (based on [AFCARS 6-month data file codebook](#))
 - Filtered to only include
 - #92 “Age of Child at the End of 6-mo Period, or at Exit” less than or equal to 25
 - #97 “Child was in at Start or Entered FC During the 6-mo Period” equals 1
- High level description of the “AFCARS Data” and “What’s Missing?” tabs

“AFCARS Data” tab

- “Planning” focus
 - “Summary” tab (UX Design 2)
 - High level how to use and interpret this chart
 - Description of chart and functionality
 - Definitions of data included in the chart (based on [AFCARS 6-month data file codebook](#))
 - #5 “State Two-Character Code”
 - #10 “Child Sex”
 - #17 “Child Hispanic or Latino Ethnicity”
 - #92 “Age of Child at the End of 6-mo Period, or at Exit”
 - #102 “Derived Race”
 - #106 “Period End Date” (for this chart, we averaged across all of these)
 - Outcome variable: (chart shows distribution of each possible case plan as percentages based on the selected demographics)
 - #51 “Most Recent Case Plan Goal”
- “Funding” focus
 - “Summary” tab (UX Design 3)
 - High level how to use and interpret this chart
 - Description of chart and functionality
 - Definitions of data included in the chart (based on [AFCARS 6-month data file codebook](#))
 - #5 “State Two-Character Code”
 - #10 “Child Sex”
 - #17 “Child Hispanic or Latino Ethnicity”
 - #92 “Age of Child at the End of 6-mo Period, or at Exit”
 - #102 “Derived Race”
 - #106 “Period End Date”

- Outcome variables: (chart shows percentage of selected demographic group who received the specified type of funding in each time period)
 - #78 “Title IV-E Foster Care Payments”
 - #79 “Title IV-E Adoption Assistance”
 - #80 “Title IV-A TANF Payment”
 - #81 “Title IV-D Child Support Funds”
 - #82 “Title XIX Medicaid”
 - #83 “SSI or Social Security Act Benefits”
 - #84 “Only State or Other Support”
 - #85 “Monthly Foster Care Payment”
- “Outcomes” focus
 - “Summary” tab (**UX Design 4**)
 - High level how to use and interpret this chart
 - Description of chart and functionality
 - Definitions of data included in the chart (based on [AFCARS 6-month data file codebook](#))
 - #5 “State Two-Character Code”
 - #10 “Child Sex”
 - #17 “Child Hispanic or Latino Ethnicity”
 - #92 “Age of Child at the End of 6-mo Period, or at Exit”
 - #102 “Derived Race”
 - #106 “Period End Date”
 - Outcome variables: (charts are scatterplots with each dot being an aggregation of the specified demographics showing various combos of the following variables)
 - #32 “Number of Placement Settings in Current FC Episode” (shown as average number of placements on chart)
 - #86 “Length (Days) Since Latest Removal” (divided by 365 to show on chart as years; shown as average number of years on chart)
 - #87 “Length (Days) in Current Placement Setting” (divided by 365 to show on chart as years; shown as average number of years on chart)
 - #95 “Entered Foster Care During the 6-mo Period” (shown as the sum of entries)
 - #96 “Child was Discharged from Foster Care During the 6-mo Period” (shown as sum of exits)
 - #98 “Child is Waiting for Adoption” (shown as percentage waiting for adoption)
 - #99 “Parents Rights Have Been Terminated” (shown as percentage TPR’d)
 - #100 “Youth is No Longer Eligible for Foster Care Due to Age” (shown as sum of aged out)

“What’s Missing?” tab (**UX Design 5**)

- Discussion of racial demographics as an example of not allowing nuance for how people identify (based on [expert user interviews](#))
- Description of how administrative data lacks youth voice, and importance of youth voice (based on [expert user interviews](#))
- Short overview of study with reddit data as an example of how to bring in youth voice and what sorts of things are often missing (i.e., human element) (based on [paper](#))
 - “Lived Experience Interactive Visual” link
 - “Summary” tab (**UX Design 6**)
 - Short description of the dataset and study, with discussion of youth voice (based on [paper](#))
 - High level how to use and interpret this chart
 - Description of chart and functionality
 - Definitions of data included in the chart (based on [paper](#))
 - Date range (inception of the community through its first full year)
 - Roles
 - Sentiment
 - Speech Acts
 - Courtney’s Domains

Appendix D: Usability Test Documents

D.1 Usability Test Brainstorm Template

App: http://uw-hcde.shinyapps.io/AFCARS_R_Shiny/

Goal of Test: The goal of this usability test is to explore how effectively the web-based AFCARS data visualization tool functions in support of professionals in the child welfare field who do research, advocacy, and/or policy work. The test should aim to use several representative scenarios and tasks to understand how easy the app is to use and understand, and to determine if there exist any issues that impede the exploration, visualization, and dissemination of resultant artifacts.

Focus of each scenario should be on:

Scenario 1: An initial exploration of the web-based tool

Scenario 2: Answering a basic question that requires manipulation of the tool

Scenario 3: Answering a more complex question that requires manipulation of the tool to gather more than one piece of information

Scenario #	Scenario Description	Task(s) # & Description	What do we want to measure?
1			
2			
3			

Additional Considerations:

-

D.2 Test Script

Hello ____, my name is _____. I am a student researcher from the University of Washington. I am part of a team that has been designing and developing a website. The website aims to help professionals working in the child welfare space to make custom data visualizations. Thank you for joining me (us) today for a 60-minute user test of the website prototype that we have been working on. Before we begin, I would like to share our consent form. Please take a moment to read it and respond.

[Copy and paste consent form into chat]

Consent Form:

<https://drive.google.com/file/d/1LTPwMdy5xccoZbxewsdKd0SE39-qtzt/view?usp=sharing>

[Copy and paste consent question into chat]

Consent Question:

Please respond to the following statement: “I have carefully read all the information in the consent form and agree to participate” by typing in either “Yes” or “No” to the chat.

[After the participant puts “Yes” in chat. If “No”, thank participant and end session]

Thank you! Now we can get started. First, I have a few background questions I would like to ask:

1. What state do you work in primarily?
2. What industry do you work in?
3. What is your job title? How many years have you worked in this role?
4. Are you familiar with the Adoption and Foster Care Analysis and Reporting System (AFCARS)?

Thank you! Now we will begin the usability test. Please remember that this is in no way a test of your abilities as a participant. There are no wrong answers, and we are interested in understanding how well the tool works for you. Please remember to speak out loud as you go through the following scenarios and tasks. Please open the following link to view the prototype we will be testing. Once you have the link open, can you please share your screen?

[Copy and paste tool link into chat]

Tool Link:

https://uw-hcde.shinyapps.io/AFCARS_R_Shiny/

[After the participant has shared their screen with the VizCare tool showing]

Before we begin, do you have any questions?

Okay, here is Scenario #1: A colleague shares a new visualization tool with you, so you decide to check it out and learn about its capabilities. [Note: Scenario can take up to 15 minutes, then move on.]

1. Take a few minutes to explore this tool, with a particular focus on how you could use it for your work. Identify the capability of the tool that you believe would be most useful for you.
2. Describe two other useful functions of this tool related to your work.
3. Find a way to take a chart that you've created offline.
 1. How would you rate the difficulty of this task on a scale from 1 = Very Difficult to 7 = Very Easy?
4. Find one capability that you expected of this tool that it cannot do.
 1. How would you rate the difficulty of this task on a scale from 1 = Very Difficult to 7 = Very Easy?

Now moving to Scenario #2: You are a researcher interested in understanding trends in foster care funding in [your state]. [Note: Scenario can take up to 15 minutes, then move on.]

1. Choose one funding source to focus on for this scenario. Tell me some information about this funding source that you can learn from the tool.
 1. How would you rate the difficulty of this task on a scale from 1 = Very Difficult to 7 = Very Easy?
2. For [your state], visualize how use of [your funding source] has changed over time.
 1. How would you rate the difficulty of this task on a scale from 1 = Very Difficult to 7 = Very Easy?
3. Compare trends in [your funding source] over time between [your state] and the rest of the nation.
 1. How would you rate the difficulty of this task on a scale from 1 = Very Difficult to 7 = Very Easy?
4. Compare how [your state] has been funded over time with one other state of your choice. Find the minimum and maximum percentages of funding for [your funding source] in both states.
 1. How would you rate the difficulty of this task on a scale from 1 = Very Difficult to 7 = Very Easy?
5. Choose a demographic (race, ethnicity, sex, or age) and one identity within that demographic (e.g., female within the sex demographic). Explore trends in [your funding source] for that demographic identity in [your state].
 1. How would you rate the difficulty of this task on a scale from 1 = Very Difficult to 7 = Very Easy?

We will now move to Scenario #3: You are working on a small study of high school foster youth from [your state]. You decide to use the tool to contextualize your findings in the typical experiences of high school aged foster youth in [your state]. [Note: Scenario can take up to 15 minutes, then move on.]

1. Looking at data for [your state], find the two most common planning goals for high school age youth.
 1. How would you rate the difficulty of this task on a scale from 1 = Very Difficult to 7 = Very Easy?
2. Find how common Medicaid funding is for high school aged foster youth in [your state]. How has this changed over time?
 1. How would you rate the difficulty of this task on a scale from 1 = Very Difficult to 7 = Very Easy?
3. What is one outcome-related finding for high school aged foster youth in [your state]? What does this tell you?
 1. How would you rate the difficulty of this task on a scale from 1 = Very Difficult to 7 = Very Easy?
4. Again looking at data for [your state], find an outcome to plot within the latest time period for high school age youth.
 1. How would you rate the difficulty of this task on a scale from 1 = Very Difficult to 7 = Very Easy?

Thank you! We are now done with the scenarios and tasks. I will conclude this interview with a few follow-up questions:

1. Consider the statement: "I think that I would like to use this system frequently for my work." Please rate your level of agreement from 1 = Strongly Disagree to 7 = Strongly Agree and explain your rating.
2. Consider the statement: "I found the system unnecessarily complex." Please rate your level of agreement from 1 = Strongly Disagree to 7 = Strongly Agree and explain your rating.
3. Where in your existing work practices could you use this system? What would it help you do?
4. Where would you expect to find this tool?
5. What (if anything) would you most like to change about this tool?

Is there anything else you would like to share with us before we finish? Thank you for your time and feedback today! Please follow up via the UserTesting.com platform if you need to reach us after today's test.

Goodbye and thank you!

D.3 Test Notes Template

Note Taker:	
Participant #:	Date and Time:
Notes on Participant:	
<ul style="list-style-type: none"> • 	

Pre-Test Question	Response
What state do you work in primarily?	
What industry do you work in?	
What is your job title? How many years have you worked in this role?	
Are you familiar with the Adoption and Foster Care Analysis and Reporting System (AFCARS)?	

Scenario 1

Time Start:

Task	Participant Difficulty Rating	Notes
Take a few minutes to explore this tool, with a particular focus on how you could use it for your work. Identify the capability of the tool that you believe would be most useful for you.	N/A	
Describe two other useful functions of this tool related to your work.	N/A	
Find a way to take a chart that you've created offline.		
Find one capability that you expected of this tool that it cannot do.		

Time Finish:

Scenario 2

Time Start:

Chosen funding source:

Task	Participant Difficulty Rating	Notes
Choose one funding source to focus on for this scenario. Tell me some information about this funding source that you can learn from the tool.		
For [your state], visualize how use of [your funding source] has changed over time.		
Compare trends in [your funding source] over time between [your state] and the rest of the nation.		
Compare how [your state] has been funded over time with one other state of your choice. Find the minimum and maximum percentages of funding for both states for [your funding source].		
Choose a demographic (race, ethnicity, sex, or age) and one identity within that demographic (e.g., female within the sex demographic). Explore trends in [your funding source] for that demographic identity in [your state].		

Time Finish:

Scenario 3

Time Start:

Task	Participant Difficulty Rating	Notes
Looking at data for [your state], find the two most common planning goals for high school age youth.		
Find how common Medicaid funding is for high school aged foster youth in [your state]. How has this changed over time?		
What is one outcome-related finding for high school aged foster youth in [your state]? What does this tell you?		

Again looking at data for [your state], find an outcome to plot within the latest time period for high school age youth.		
--	--	--

Time Finish:

Post-Test Question	Response
Consider the statement: "I think that I would like to use this system frequently for my work." Please rate your level of agreement from 1 = Strongly Disagree to 7 = Strongly Agree and explain your rating.	
Consider the statement: "I found the system unnecessarily complex." Please rate your level of agreement from 1 = Strongly Disagree to 7 = Strongly Agree and explain your rating.	
Where in your existing work practices could you use this system? What would it help you do?	
How or where would you expect to discover a tool like this?	
What (if anything) would you most like to change about this tool?	

Additional Notes:

-

D.4 Consent Form

UNIVERSITY OF WASHINGTON CONSENT TO ACT AS A RESEARCH SUBJECT

The purpose of this study is to better understand how people interact with a web-based visualization tool we are creating to explore data related to the experiences of foster youth in the United States. Please read this form and ask any questions through email that you have before agreeing to participate. This research is being conducted by Prof. Mark Zachry and graduate student John Fowler from the University of Washington.

To join the study, you must be at least 18 years of age and have a professional interest in the experiences of foster youth in the United States. You should also feel comfortable participating in an interview discussion in English. The overall length of your participation in this interview study will not exceed an hour.

If you agree to be in this study, you may be asked to do one or more of the following:

1. Explore the features and functions of a web-based visualization tool
2. Perform a set of tasks with the tool
3. Provide your thoughts about using the tool
4. Agree to be video or audio-recorded during this process.

Risks

Participation in the study may involve risks or discomfort, including:

1. Loss of confidentiality, even though we make every effort to ensure anonymity. When using video data from the interview, we will not identify participants by name. Recording may be stopped at any time, and the entire recording may be erased at your request. Research records will be kept confidential to the extent allowed by law. Ultimately, the digital videos will be wiped from their respective storage drives (computer hard drives or digital media tapes) after this research study is completed.
2. Potential for boredom and fatigue. If you become bored or fatigued at any time during the study, you may ask for a break or to terminate the session.

Participation in the study is entirely voluntary. You may refuse to participate or to withdraw or you may refuse to answer specific questions during the study at any time without penalty. If you decide to stop participating, you must let us know that you wish to stop. If you do so, we will stop recording. The alternative to participation in this study is to choose not to participate.

Your participation may help improve the design of this tool.

If you have any questions or research-related problems, you may email: uw.hcde.vizcare@gmail.com. You may call the Human Research Protections Program at 206.543.0098 for more information about this, to inquire about your rights as a research subject, or to report research-related problems.

Please type “yes” to the question in the chat if you agree to participate in the interview.

Appendix E: Validation Survey

E.1 Validation Survey

VizCare Feedback

Thank you for your interest in the VizCare tool.

You can access the tool at this link: <https://uw-hcde.shinyapps.io/VizCare/>

After you explore the tool, please provide us with some feedback through this short (1 minute) survey. Your input will be incredibly helpful to the development of this tool for future use. Thanks!

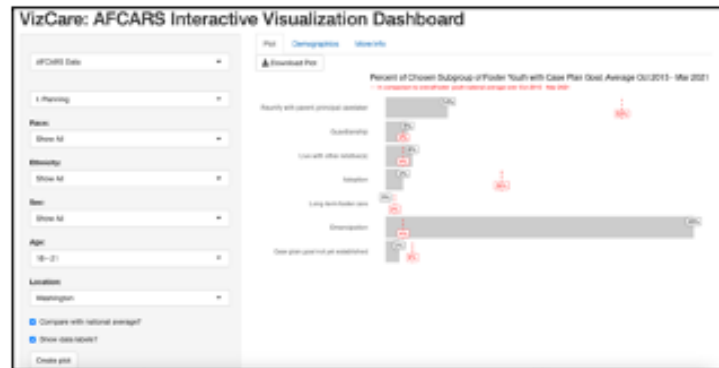
1. Which title(s) related to the contents of this tool apply to you? (Select all that apply)
 - Administrative Social Worker
 - Field Social Worker
 - Person with Lived Experience in Foster Care
 - Policy Advocate
 - Researcher
 - Other: _____
2. Which location is most relevant to your current professional interests in the child welfare system?
 - Alabama
 - Alaska
 - Arizona
 - Arkansas
 - California
 - Colorado
 - Connecticut
 - Delaware
 - District of Columbia (D.C.)
 - Florida
 - Georgia
 - Hawaii
 - Idaho
 - Illinois
 - Indiana
 - Iowa
 - Kansas
 - Kentucky
 - Louisiana
 - Maine
 - Maryland
 - Massachusetts
 - Michigan
 - Minnesota
 - Mississippi

- Missouri
 - Montana
 - Nebraska
 - Nevada
 - New Hampshire
 - New Jersey
 - New Mexico
 - New York
 - North Carolina
 - North Dakota
 - Ohio
 - Oklahoma
 - Oregon
 - Pennsylvania
 - Rhode Island
 - South Carolina
 - South Dakota
 - Tennessee
 - Texas
 - Utah
 - Vermont
 - Virginia
 - Washington
 - West Virginia
 - Wisconsin
 - Wyoming
 - U.S. Territories
 - National (U.S.)
 - None of the above
3. Please rate your agreement with this statement: "I think this tool would be useful for some aspects of my work."
- 1 = Strongly Disagree
 - 2
 - 3
 - 4
 - 5
 - 6
 - 7 = Strongly Agree
4. Please explain your rating to the previous statement.
5. Any additional feedback?

E.2 Validation Survey Recruitment Form

VIZCARE: A TOOL FOR CREATING VISUALIZATIONS OF AFCARS DATA

bit.ly/3VMPnR1



Please use this link to access VizCare and a 1-minute feedback survey.

Thank you!


John Fowler | PhD Candidate | University of Washington

Appendix F: Usability Test Analysis Persona

F.1 Draft of Proto-Persona Created by Student

DRAFT: Proto – Persona **Change maker** **Advocate** **Data driven**

Ida Informed



AGE	40
EDUCATION	Masters in Social Work
INCOME	110,000 yearly
OCCUPATION	Research consultant
EXPERIENCE	15 years on the job
LOCATION	Coastal state

“ I use this visualization tool to support personal stories when presenting to decision makers **”**

Bio

Ida has held many youth advocacy roles across industries such as government, education, and consulting. Her mission is to utilize her research and political advocacy skills to influence policy-makers to make change when it comes to child welfare.

Core needs while using AFCARS (User stories)

- As a foster care researcher, I want to visualize data so that I can compare my state with others and **benchmark goals**.
- As a foster care researcher, I want the **chart and relevant “more info” to be on the same tab** so that I can interpret the data visualizations more efficiently.
- As a foster care researcher, I want **confirmation that I’m interpreting and contextualizing the data accurately** so that I don’t accidentally misrepresent my conclusions.

Frustrations while using AFCARS

- Scatter plot in the Outcomes tab is hard to make sense of
- Unable to compare state level charts side by side
- Inability to zoom in to look at the details of the chart
- Data within the nationwide view is tiny and the states are organized in geographical location on a map seemed surprising
- Had to guess what the dots meant

Fig. F.1 Proto-persona from usability test results. This is a draft of a proto-persona created by a student on the research team as part of the process of making sense of our usability test results.

Credit: Sophie Nop

Appendix G: Visualization Tool Screenshots

G.1 VizCare Overview Page

VizCare: AFCARS Interactive Visualization Dashboard

Site Navigation

Overview

Welcome!

VizCare is an interactive data visualization (i.e., charts/graphs) dashboard designed for exploration of foster care data from the [Adoption and Foster Care Analysis and Reporting System \(AFCARS\)](#). We hope you can use VizCare to support your research and policy advocacy work in relation to the U.S. child welfare system.

How to use VizCare?

Before using VizCare, we first recommend reading the rest of the overview on this page. Once you are ready to begin customizing your own data visualizations, you can start by selecting "AFCARS Data" on the dropdown menu to your left. This page shows AFCARS data represented in various charts and includes a summary of what the data represents. You can explore data related to three dimensions of the foster care system, including *Planning*, *Funding*, and *Outcomes*. The *Planning* section relates to youth case plan goals, the *Funding* section relates to the sources of funding associated with youth cases, and the *Outcomes* section relates to data variables that measure important types of impact that system-involvement can have on a young person's life. Within each section, you can create charts that explore disparities in the system based on geography and demographics like race and age.

What is this project?

We are a group of human-centered design & engineering researchers aiming to support professionals who do research and inform policy related to the child welfare system. We are especially interested in supporting work at the intersection of higher education and the transition to adulthood out of the foster care system. In particular, we are interested in easing access to AFCARS data through a series of interactive visualizations. Our goal as a project is to create a colorful, digestible dashboard that allows professionals to easily visualize and utilize AFCARS data in their work while humanizing the data beyond plain numbers.

What is AFCARS?

AFCARS is a federally mandated data collection system that contains information on children in the foster care system and are protected by the Title IV-B/E of the Social Security Act (Section 427). The purpose of collecting this data was to help inform decisions within policy and program management at the state and federal level as well as to help researchers analyze aspects of the foster care system. AFCARS consists of demographic data including gender, age, race, and ethnicity. There is also information specific to system involvement including the number of previous stays in foster care, service goals, whether the young person is waiting for adoption, dates of removal and discharge, funding sources, and some information on the young person's parents and foster parents. The data is reported by fiscal year (October 1 to September 30). Note, this data is not collected nor managed by members of the group who created this visualization tool.

What's missing in AFCARS data?

While visualizing AFCARS data can be useful, it is important to keep in mind what is missing from the data. Check out the "What's Missing?" page for discussion what aspects of the human experience tend to be missing in administrative data and other limitations in the AFCARS dataset

G.2 VizCare AFCARS Data – Demographics Page

VizCare: AFCARS Interactive Visualization Dashboard

Site Navigation

AFCARS Data

I. Planning

Compare two plots?

Race:

Show All

Ethnicity:

Show All

Sex:

Show All

Age:

Show All

Location:

Washington

Compare with national average?

Show data labels?

Plot Demographics

Race

The race of a young person as derived by NDACAN from five possible categories: "Asian," "Black or African American," "Native Hawaiian or Other Pacific Islander," "White," and "American Indian or Alaska Native." In AFCARS, a young person is categorized with a race if they identify as a member of that race or the parent identifies the young person as a member of that race. If the young person identifies with multiple individual races, they are shown as "More than One Race." If a young person is not identified with a race, they are shown as "Missing or Unknown" in AFCARS.

As defined in AFCARS, if a young person is "Asian," they might have origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent. If the young person is "Black or African American," they might have origins in any of the Black racial groups of Africa. If the young person is "Native Hawaiian or Other Pacific Islander," they might have origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands. If the young person is "White," they might have origins in any of the original peoples of Europe, the Middle East, or North Africa. If the young person is "American Indian or Alaska Native," they might have origins in any of the original peoples of North and South America (including Central America) and maintain tribal affiliation or community attachment.

Ethnicity

The "Hispanic or Latino" ethnicity of the young person, as defined in AFCARS as "Hispanic or Latino," "Not Hispanic or Latino," or "Unable to Determine." How a young person identifies in AFCARS can be determined by how they define themselves or by how others define them. In the case of young children, parents determine the ethnicity of the youth. "Unable to Determine" is used when the child is very young or is severely disabled and no person is available to determine the child's ethnicity, or if the parent, relative or guardian is unwilling to identify the child's ethnicity. People may be of any race regardless of their ethnic identity.

Sex

The biological sex of the young person as indicated at birth, which is defined in AFCARS as "Male," "Female," or "Other or Unknown."

Age

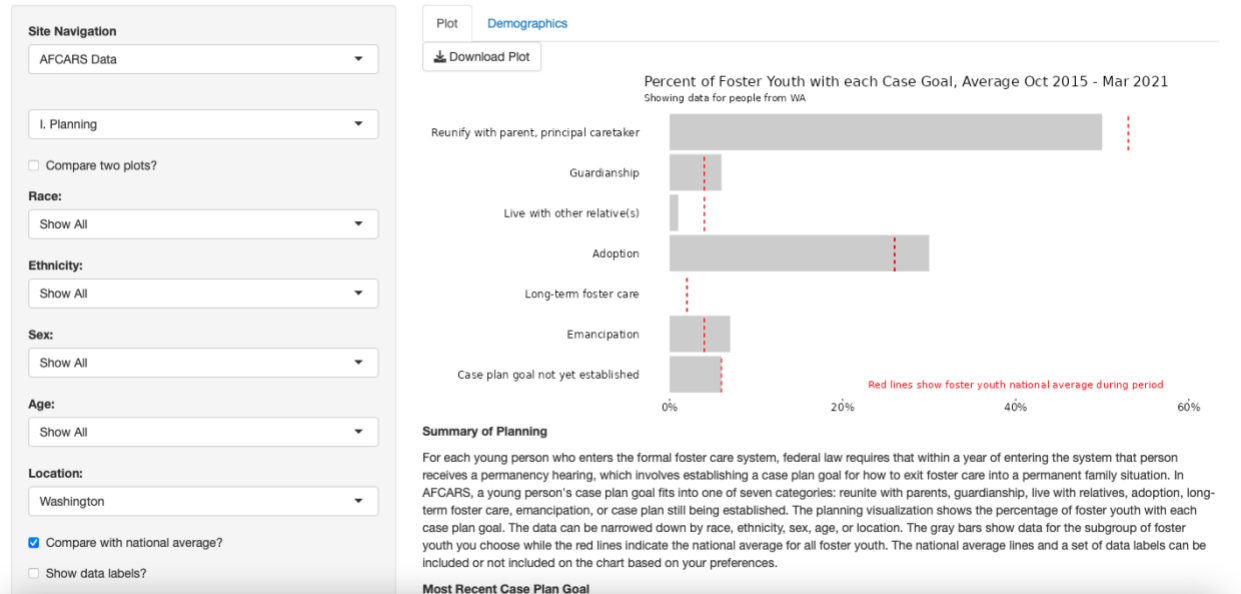
The age of the young person on the last day of the six-month time period or on the date of discharge if the young person exited foster care at some point during the six-month time period.

Location

Name of the state or the District of Columbia where the title IV-E agency making the AFCARS report on behalf of the young person is located. We also include a national-level view.

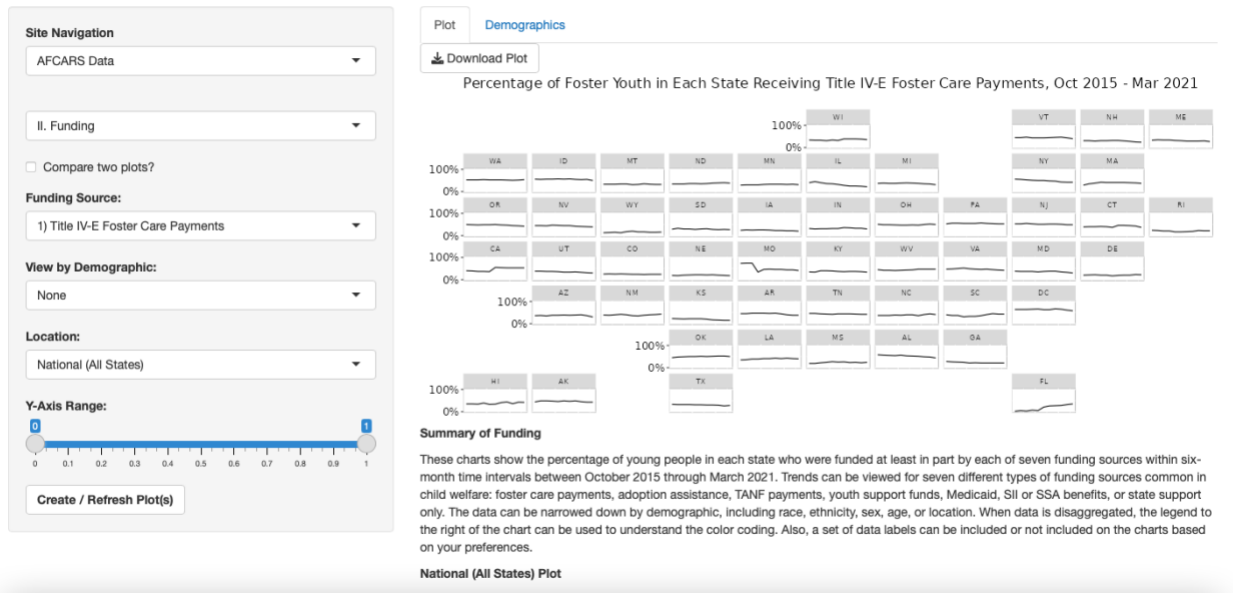
G.3 VizCare AFCARS Data – Planning Page

VizCare: AFCARS Interactive Visualization Dashboard



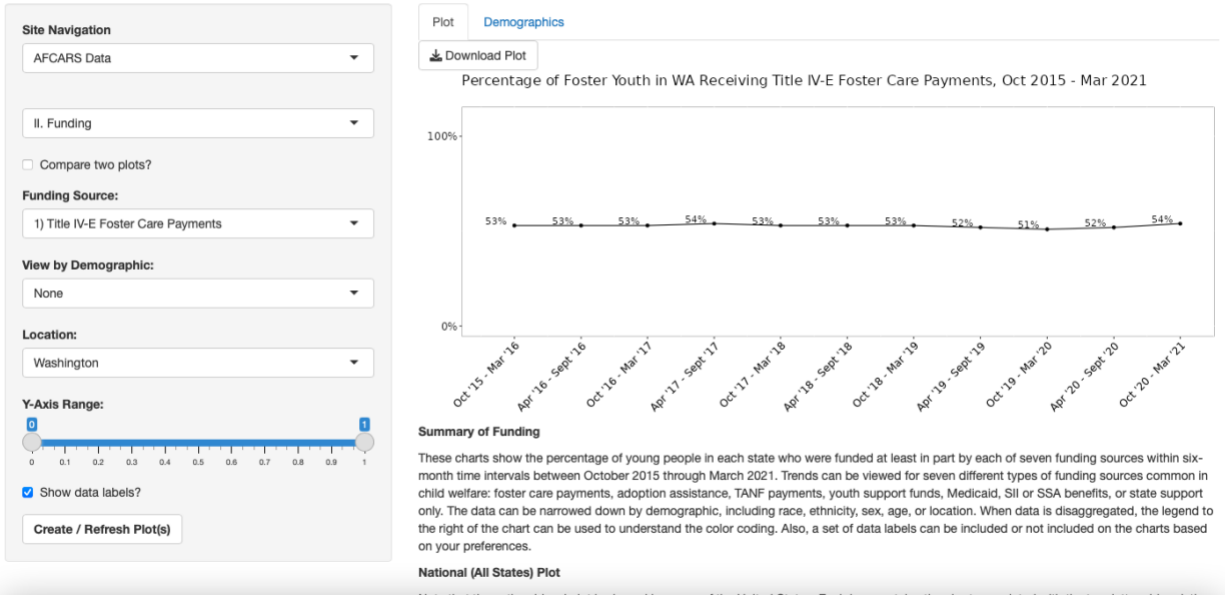
G.4 VizCare AFCARS Data – Funding (National) Page

VizCare: AFCARS Interactive Visualization Dashboard



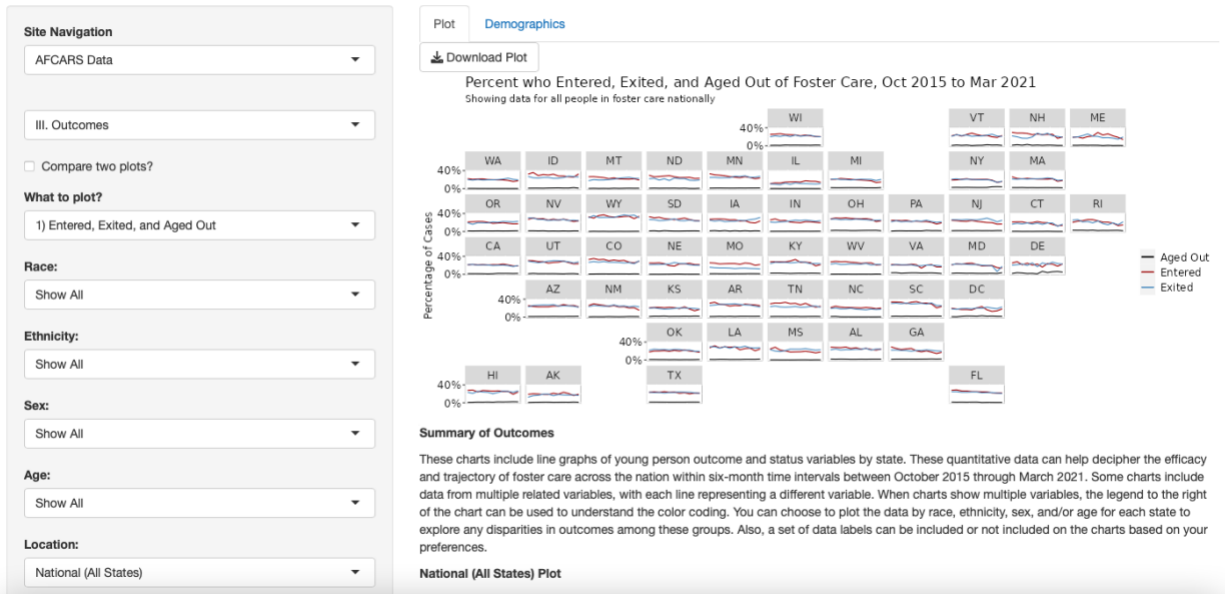
G.5 VizCare AFCARS Data – Funding (State) Page

VizCare: AFCARS Interactive Visualization Dashboard



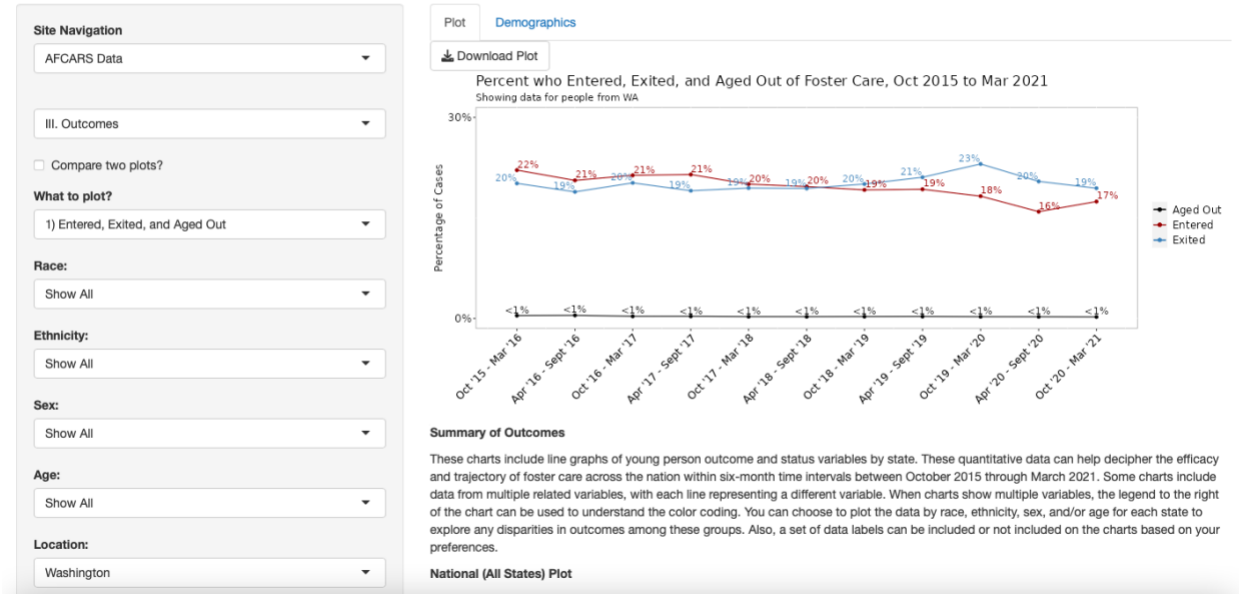
G.6 VizCare AFCARS Data – Outcomes (National) Page

VizCare: AFCARS Interactive Visualization Dashboard



G.7 VizCare AFCARS Data – Outcomes (State) Page

VizCare: AFCARS Interactive Visualization Dashboard



G.8 VizCare What's Missing? Page

VizCare: AFCARS Interactive Visualization Dashboard

Site Navigation

What's Missing?

What is useful?

Visualizing administrative data like AFCARS can be helpful for following trends in the foster care system:

- For easily quantifiable variables
- With large sample sizes
- At regular intervals over time
- Throughout the country
- Across certain high-level demographics to observe disparities

What are some limitations?

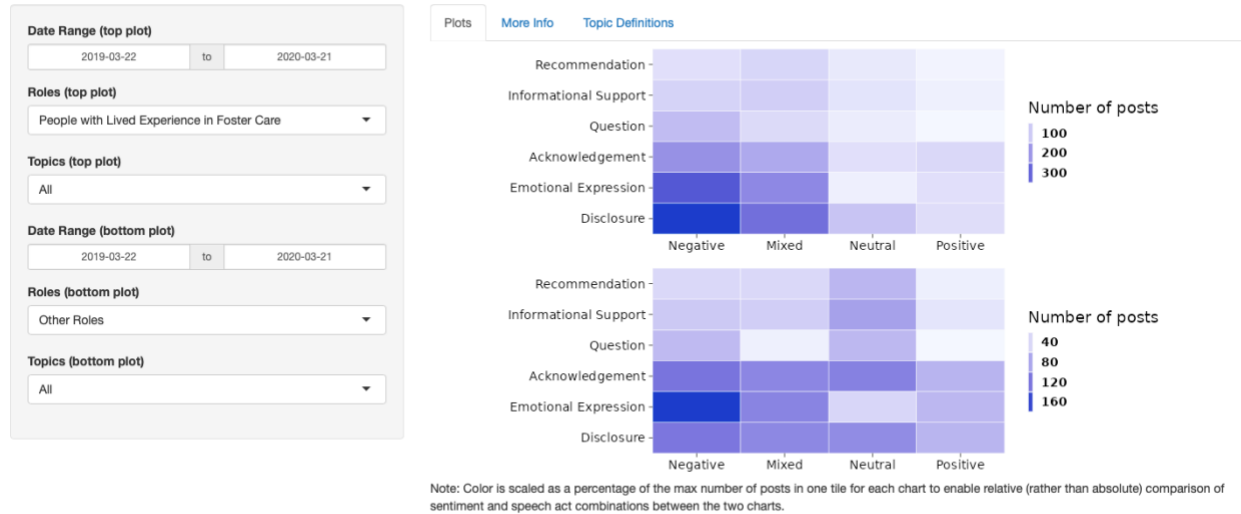
Despite these important use cases, limitations of administrative data like AFCARS exist. A few of these include:

- Qualitative data from young people's lived experience in the foster care system are not available
- There are no survey items in the AFCARS dataset related to gender or sexual identity. By not allowing foster youth to voluntarily share these identities, it is impossible to use AFCARS to gauge trends and disparities in foster care planning, funding, and outcomes for gender and sexual minorities
- Race and ethnicity categorizations in the data can be too highly aggregated to help understand the nuanced experiences of different communities across the nation. For example:

Let's consider two hypothetical children. We can say that each child entered the foster care system and is categorized as "Black or African American" in the AFCARS system. One of these children was born in Somalia and moved to the United States five years ago. The other child was born in Louisiana and their grandparents grew up in the Caribbean. Maybe these children's first preference is to identify as "Black or African American," but maybe they would prefer some other designation that relates to their cultural background or some other sense of identity they possess. It is possible that children from these backgrounds tend to have similar or different experiences in the system, but with the granularity and structure of the current data, these are unfortunately not questions that we are able to explore. From the AFCARS data itself, we do not know if these children would have chosen a more specific identity and we do not know if the foster care experiences and outcomes within smaller communities in this country

G.9 FosterCommViz Plots Page

FosterCommViz: Foster Care Online Community Speech Comparison Tool



G.10 FosterCommViz More Info Page

FosterCommViz: Foster Care Online Community Speech Comparison Tool

Date Range (top plot)
2019-03-22 to 2020-03-21

Roles (top plot)
People with Lived Experience in Foster Care

Topics (top plot)
All

Date Range (bottom plot)
2019-03-22 to 2020-03-21

Roles (bottom plot)
Other Roles

Topics (bottom plot)
All

Plots **More Info** Topic Definitions

Where did this data come from?

The data for this visualization come from a study of an online community on Reddit that is centered on the experiences of people who have spent time in the foster care system. The data include all posts over the first year that the community existed from late March 2019 through late March 2020. The posts were qualitatively coded by a team of researchers to determine the role of the poster, the topics discussed in the posts, the sentiment of the posts, and the types of speech acts included in the posts. Through this coding process, we categorized posts to understand high-level trends in natural conversation within the community. This allows us to see at a community-level what topics people who have spent time in the foster care system focused on related to their experiences in the system, and how they typically discussed and felt about those topics.

How to use this tool?

This visualization tool provides a comparison of two customizable heatmaps. You can customize both the top and bottom heatmaps to include posts from time periods, roles, and topics of discussion that interest you. Each heatmap shows the number of posts meeting your custom inputs that include one of the six speech acts labeled on the left-hand side of each heatmap and one of the four sentiments labeled at the bottom of each heatmap. The more posts that include both a particular speech act and a particular sentiment, the darker the coloring of the rectangle that corresponds to those particular row and column labels. You can use this tool to compare what the most (or least) common ways each topic in the community was discussed based on the roles of the posters and time periods you choose to view for each chart.

Definitions

- Date Range:** The full first year (March 22, 2019 - March 21, 2020) that the community existed.
- Role:** The identity of the poster based on if they indicated having spent time in the foster care system at some point in their life.
- Topics:** The 23 domains labeled on the left-hand side of each heatmap. The first eight domains in the dropdown menu were derived from a research review of decades of social work research by Dr. Mark Courtney that identified the domains of outcomes most commonly associated with the transition from foster care to adulthood. The 15 domains at the bottom of the dropdown menu were derived by a group of researchers after reading through each of the posts. Complete definitions of each topic can be found in the "Topic Definitions" tab.
- Sentiment:** The four types of feelings that people expressed in posts related to the topics included in those posts. These four topics are mutually exclusive and can be found on the bottom of each heatmap.
- Speech Acts:** The six conversational descriptions labeled on the left-hand side of each heatmap. These conversational descriptions are the ways that people discussed the topics in each post, and multiple can show up simultaneously in any given post.

Check out the paper: [Characterizing the Concerns of Former Foster Youth in an Online Community](#)
Interested in visualizing administrative AFCARS data? [VizCare Dashboard](#)

G.11 FosterCommViz Topic Definitions Page

FosterCommViz: Foster Care Online Community Speech Comparison Tool

[Plots](#) [More Info](#) [Topic Definitions](#)

Date Range (top plot)
2019-03-22 to 2020-03-21

Roles (top plot)
People with Lived Experience in Foster Care

Topics (top plot)
All

Date Range (bottom plot)
2019-03-22 to 2020-03-21

Roles (bottom plot)
Other Roles

Topics (bottom plot)
All

Education: Topics related to institutional learning. Some subtopics include educational attainment, enrollment, skills learned at school, and relationships with educators or tutors.

Physical and Mental Health: Topics related to the health of person's mind or body. Some subtopics include physical illness or injury, mental health, medical coverage, hospitalizations, and interactions with health care professionals.

Substance Use: Topics related to a person using substances. Some subtopics include alcohol abuse, illegal drug abuse, prescription drug use, use of medical marijuana, and being around others with substance abuse problems.

Criminal Justice System Involvement: Topics related to criminal activity and the system of government institutions set up to deal with this activity. Some subtopics include incarceration, ticketing, interactions with law enforcement, crimes not caught by law enforcement, being temporarily housed in jail, recidivism, and being around others with criminal justice system involvement.

Employment and Economic Self-Sufficiency: Topics related to working and making money to support oneself. Some subtopics include employment, wages, public assistance, and ability to pay bills.

Housing and Homelessness: Topics related to where a person is living. Some subtopics include housing instability, homelessness, moving frequently, feelings around the concept of home, shelters, and group homes.

Family Formation: Topics related to a person who has experienced foster care forming a family of their own. Some subtopics include marriage, cohabitation, parenting, having a child, and choosing to be a foster parent themselves.

Family Relations: Topics related to relationships a person who has experienced foster care has with their biological family and/or foster family. Some subtopics include relationships with nuclear family, extended family, and foster family; interactions between biological and foster families; non-traditional concepts of family; and feelings about the concept of "foster to adopt."

Internet: This domain is related to online engagement and general reference to or use of the internet. A common example would include reference to Reddit and often this particular online community. Other topics might include internet access and literacy.

Representation in Media: This domain is related to foster youth and other parts of the foster care system as they are depicted in media. These media can include newspaper articles, movies, television, books, and other forms of published or official communication. It also includes generally how people who have experienced foster care want to be represented to the public.

Food: This domain includes anything related to food. This can be wide ranging and includes topics like food insecurity, favorite recipes, and knowing how to cook. It also includes how to access food and the effects of having that access limited.

Life Skills: This domain is related to practical considerations and topics important to negotiating tasks important to daily life and basic needs. It can include topics to learn more about life skills, as well as advice or descriptions of how to navigate institutions. This domain often discusses obtaining