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Rurality, Resilience, & Identity
A Soft Systems Methodology Approach to Understanding Self-Reported Issues in Rural America

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Abstract

This study investigates how rural communities in Oklahoma conceive of their socioeconomic position in larger systems, as well as their resiliency and ability to withstand challenges. Utilizing systems thinking and polycentricity literature, we analyze interviews to construct an understanding of how rural communities perceive themselves, and how this impacts interactions with other communities and governments. Rural communities and their associated challenges are complex and impacted by a range of factors. We find that rural residents also feel this complexity, and understand their issues as products of overlapping systems and structures, and both internal and external factors. Additionally, we observe little mention of issues defined by liberal-conservative lines, but instead as defined by the rural-urban divide, indicating these issues are defined not by political identity necessarily, but a place-based identity.

Keywords: *rural, resilience, identity, system thinking, polycentricity, political identity*

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INTRODUCTION

Rural communities are increasingly vulnerable in many different ways, which not only implicates the overall well-being of these communities, but also leaves them feeling increasingly discontented, particularly in regard to their relationship to urban spaces (Cramer, 2016). This rural-urban relationship, thus, is increasingly conflictual. The decline of rural America is well documented, yet we need more work that captures the lived experiences of people in rural America that avoids assumption of homogeneity across rural areas. Rural communities are complex systems, which creates challenges for developing policy interventions. The research presented here explores the complexity of rural communities with a systems-thinking lens through the stories of rural Americans living in two communities in southwestern Oklahoma. One in five Americans live in rural areas (Ratcliffe et al. 2016), which makes it imperative to understand the nature of the problems facing rural Americans[1]. All communi-

[1] For the purposes of this paper, we adopt the definition for 'rural' utilized by the US Census Bureau. Briefly, the US Census Bureau defines urban areas and defaults all other areas not urban, as

ties, whether urban or rural, face a complex arrangement of problems. Many rural communities are facing long-term environmental change, significantly higher unemployment, rapidly decreasing population, and much more, coupled with a loss of local organization and political capacity. These many changes and challenges often leave rural communities feeling that they are in a subordinate, neglected position to their urban counterparts, without sufficient resources and representation to address either internal or external challenges and inequities. The result is very often political and policy conflict.

There is an urgent need to develop capacity for policy response in a way that capitalizes on the coupled systems in rural communities that interact and reinforce each other. Resilience in rural communities can be supported through policies that give residents 'local control' of structures and processes that allow them to maintain healthy and vibrant, self-sustaining local economies. Resilience is further fostered by the recognition of the historical, socioeconomic, and political traditions in local communities, rather than making assumptions about agrarian lifestyles and the limits of resilience, therein (Holt-Giménez et al., 2021; Harrison and Chiroro, 2016). Local control further allows these communities to implement policy solutions tailored to the specific kinds of threats, populations, and problems in individual communities. These kinds of policies are typically best crafted when they recognize the complex nature of problems in rural areas and harness that complexity as an advantage in crafting policy interventions, rather than falling victim to the 'Institutional Complexity Trap,' which results from non-coherent bodies of policy (Bolognesi, Metz & Mahrath, 2021). The study presented here is a first step to developing capacity that prioritizes policymaking that includes rural stakeholders and emphasizes local control by exploring how rural Americans perceive their overall community sustainability—how resilient their communities are to 'wicked' problems—and identify vulnerabilities at different scales across and within counties or the entire state.

This study investigates how rural communities conceive of their social and economic position in larger systems and structures, as well as their resiliency and ability to withstand disasters and challenges. Utilizing systems thinking and polycentricity literatures, we analyze self-perceptions of rural residents via interviews to construct an understanding of how rural communities perceive of themselves. We further explore how this potentially impacts interactions with other rural communities, non-rural communities, and governments.

To do this, we use Oklahoma as a case study. Oklahoma was chosen for a number of reasons. In terms of U.S. states, Oklahoma represents a typical case (Yin, 2003), in that it falls in the middle in regard to percent of population living in rural areas at #38, with 35.4 percent of its population classified as rural by the U.S. Census (U.S. Census Bureau, 2020). However, Oklahoma ranks in the top ten U.S. states for poverty rate (U.S. Census Bureau, 2022) at 15.3 percent, about four percent higher than the national rate of 11.5 percent (U.S. Census Bureau, 2023a). However, while more than a third of the population of Oklahoma lives in a rural area, 17.4 percent live below the poverty line, two percent higher than the state average, compared to 14.5 percent in urban areas, about a percent lower than the state average (USDA, 2023). Thus, while Oklahoma is relatively average in terms of rurality, it has extreme dynamics in regard to the economic well-being therein. This is despite relying on rural areas for nearly a quarter of its GDP (U.S. Census Bureau, 2023b). Mining accounts for 22.5 percent, and while agriculture accounts for a much smaller 2.2 percent, Oklahoma is the country's number one rye producer, number two beer and winter wheat producer, and number four pecan producer (Farm Flavor Oklahoma, 2024).

Based on this broad aim and with Oklahoma as our case study, we propose the following two research questions:

RQ1: How do individuals in rural Oklahoma recognize the complexity of problems in their communities?

RQ2: How do rural Oklahomans describe their experiences?

Empirically, we gain important insights into how residents themselves conceptualize problems and how those conceptualizations can reveal opportunities for revitalization of resources and attitudes that will contribute to long-term sustainability of rural communities. We conceptualize *problems* as encompassing a types of events, both internal and external that include personal events, economic or financial events, political events, and/or natural disasters. Examples of these might include "brain drain," or the phenomenon of young people leaving rural communities, crumbling physical infrastructure due to a lack of financial and economic investment, a lack of adequate political representation for rural interests in the state legislature, or natural disasters like tornadoes, fire, etc. We conceive of *experiences* as the self-reported responses of rural residents in response to these problems, including feelings of pessimism, apathy, learned helplessness, resiliency, pride, commitment to community, collaboration, etc. With its application in an understudied context, this research 1) contributes theoretically to both systems thinking and polycentricity and 2) develops a methodology for applying those theoretical lenses to qualitative analysis. The paper proceeds as follows: we begin by laying out our theoretical foundations, in which we draw on interdisciplinary systems

rural. For a detailed discussion, see Ratcliffe et al. 2016.

thinking and polycentricity literature, as well as literature on rural issues. We then describe our qualitative coding methodology, followed by our results, which rely on descriptive statistics and code correlations. We conclude with our results, which emphasize the complex, interconnected nature of rural problems, as reported by rural residents, as well as directions for future research in regard to urban-rural spatial conflict and issues of democratic inclusion.

THEORETICAL FOUNDATION

In terms of situating our research questions in a theoretical framework, we proceed from the assumption that the issues and conceptions of resilience in rural communities are complex and influenced by multiple, overlapping systems. Much extant social science literature has studied discrepancies in resources between rural and urban communities, particularly through the lens of 'structural urbanism' (Wakefield, 1990; Probst et al., 2019), which is defined by an 'unconscious patriarchy of the spatial' that constructs rural communities as 'small, weak, challenged, and vulnerable, and in need of our protection' (Bell, 2007, p. 40, 407). This often results in urban solutions implemented to address rural problems (Probst et al., 2019), though not necessarily policy success in the perspective of these rural communities (McConnell, Grealy and Lea, 2020). In rural communities, particularly over the last decade as they endured the trifecta of the subprime mortgage crisis, the opioid crisis, and the COVID-19 Pandemic, many interdependent issues have become apparent. Rural youth that enter higher education have lower success rates than their urban peers in addition to extreme difficulties (Aylesworth and Bloom, 1976; Barker 1985; Herzog and Pittman, 1995). Poor healthcare infrastructure has also had severe implications that became apparent during the opioid epidemic and COVID-19 (Finlayson, 2005; Hoge et al., 2013; Gale et al., 2017, Jones, 2018; Swann et al., 2020; Souch and Cossman, 2020; Sun et al., 2022). Many rural communities are also chronically poor, and increasingly in decline as youth move from rural areas, leaving an aging population behind (Champion, 2012; Ulrich-Schad and Duncan, 2018).

In addition to externally catalyzed issues, rural communities also struggle with a range of internal issues. These often encompass issues in the "hollowing out" (Carr and Kefalas, 2010) of rural areas as they struggle to retain diverse and youth populations, as well as sustaining economic growth (Ulrich-Schad & Duncan, 2018). Such retention issues extend to educators in public schools as well. To compound public health issues like the opioid epidemic and COVID-19, rural communities grapple with a high incidence of distrust in evidence-based medicine and a willingness to trust misinformation, further compounds already dangerous public health crises (Doherty et al., 2021; Kricorian, Civen, and Equils, 2021; Spleen et al., 2014). Many of these contrarian, non-evidence-based viewpoints are an angry and bold reaction to the feeling that 'rural residents ... are shouldering the brunt of the major transformations ... in the global economy' and suffering for it (Ulrich-Schad and Duncan, 2018, p. 65). Further, in the face of feelings of exclusion, rural populations are particularly likely to latch on to xenophobic and racist rhetoric in an effort to be *seen* and *heard* and to prioritize other salient rural issues (Gabehart, 2022; Cramer 2016; Coenders, 2003; Wimmer, 1997; Shucksmith et al., 1994).

Additionally, these issues are not often studied from the viewpoint of rural communities themselves, but rather in regard to relative homogeneity in regard to what rural areas are, rural areas related to urban areas, policy failure, or as a dichotomous variable (Gabehart, 2022). As Ribot (2014) points out, vulnerability is often connected to issues of poverty or resource deprivation, but we rarely question *why* capacity is lacking. Such urban hegemony and a general mainstream and academic lack of what ruralness means is problematic, particularly as rural consciousness is not simply defined by place of residence but is a deeply ingrained aspect of personal identity (Cramer, 2016). We aim to study ruralness as a theoretical focus in its own right, focusing specifically on how individuals in rural communities' self-report their feelings about their place in interconnected systems, particularly in times of crises, allowing them to serve as advocates for themselves (Bateson, 2023 forthcoming).

To bolster our claims about rural communities as complex systems, we further rely on the interdisciplinary foundations of systems thinking models, specifically, soft systems methodology (SSM) as used in public management and social sciences. We also draw on polycentricity and its focus on multiple, overlapping centers of influence. We contend that these theories, which emphasize overlapping systems and centers of influence respectively, complement one another and sufficiently describe phenomena observed in rural communities.

Systems Thinking Frameworks

'Hard' systems thinking emerged from biology and chemistry in the eighteenth and nineteenth centuries to examine how organisms function holistically within overlapping systems (Woodger, 1929; von Bertalanffy, 1968; Gray and Rizzo, 1973; Capra, 1997; Checkland 1999a). Systems thinking, however, has moved outside of the hard and computer sciences into the social sciences as well, particularly operational sciences and management science (OR/MS) (Ackoff 1962; 1979; Churchman 1963). This has led to a sub-area of systems thinking referred to as 'soft' systems methodology (SSM) (Checkland, 1981;

1999b; Checkland and Scholes, 1990). Both hard and soft systems thinking, however, embody four basic ideas outlined by Checkland (2000): 1) 'Every situation in which decision-making is involved is a social situation in which people attempt to take purposeful action that is meaningful to them. The identification of this purpose is an emergent outcome of interaction among multiple actors,' 2) 'Many interpretations of a declared purpose (goal or objective) are possible ... the perspective or world view on which it is based has to be declared,' 3) 'There is a need to move away from the identification of a problem that requires a solution and toward the idea of a situation that some people may regard as problematic,' and 4) 'Management action takes place when people in a given situation agree on a course of action that is desirable and feasible given their individual histories, relationships, culture, and aspiration' (Cundill et al., 2011, p. 15). While there is disagreement over a cohesive definition of systems thinking across disciplines (Cabrera, Colosi & Lobdell, 2008), at its core, all systems thinking examines 'the concept of a whole entity [the *adaptive whole*] which can adapt and survive, within limits, in a changing environment' that is layered through the processes of communication and control (Checkland, 1999a). We conceive of the "whole entity" in question in this study, rural communities, as embodying Checkland's (2000) four basic ideas.

The principles of SSM have been used to successfully manage environmental projects (Collins et al., 2007, Ison et al., 2007; Waltner-Toews et al., 2005; Stewart and Ayres, 2001). Although SSM in OR/MS was initially concerned with quantitative modeling, scholars have advocated for its qualitative use to understand human behavior in more normative ways (Mingers,1980; Mingers & White, 2010; Cundill et al.; 2011). We employ it qualitatively in our analysis. It has further been applied across a range of policy domains to holistically understand and begin to craft meaningful policy solutions to 'wicked problems' in preventive health (Haynes et al., 2020), natural resource management (Bosch et al., 2007), regulating economic markets (Dodgson et al., 2011), community involvement initiatives (Midgley and Richardson, 2007), and education (Bates, 2013), among others. We build on this qualitative use of SSM to explore rural communities and their understanding of themselves, their challenges, and the systems they live in.

To situate our study in this vast literature, we rely on systems thinking literature that 'emphasizes a holistic approach to analysis that focuses on the way a system's constituent parts interrelate and how systems work over time and within the context of larger systems' (Forrester 1956). In humans, interactions with the world occur at four levels of thinking to understand and situate themselves in such interrelated systems:

> *Events*: The level where people become aware of things in the world through a noticeable change at home, workplace, city, the nation or in the world.
> *Patterns of Behavior*: A larger set of events are linked ... and show changes and trends over an extended period of time.
> *Systems*: How trends and patterns relate to affect one another.
> *Mental Models*: Why things work the way they do. Mental Models reflect beliefs, values, and assumptions that we personally hold, and they underlie our reasons for doing things the way we do (Bosch, Maani & Smith, 2007; Maani and Cavana, 2007).

Beyond *Events*, human behavior at the other four levels is rarely directly observable and thus requires individuals to think about and report their experiences through interviews or other methods. Our methodology is based on these four interrelated parts as humans think about them. We apply these four levels of thinking in our codebook in order to analyze rural residents' self-perceptions about the complexity of their communities.

Polycentricity

Just as systems thinking emphasizes overlapping systems, so too does Vincent Ostrom's theory of polycentricity. Ostrom, Tiebout, and Warren (1961) wrote, drawing from Polanyi's (1951) work on polycentric scientific methods that:

> 'Polycentric' connotes many centers of decision-making which are formally independent of each other. ... To the extent that they take each other into account in competitive relationships, enter into various contractual and cooperative undertakings or have recourse to central mechanisms to resolve conflicts, the various political jurisdictions in a metropolitan area may function in a coherent manner with consistent and predictable patterns of interacting behavior (p. 831).

Polycentricity was first and has been most often applied to issues of local, metropolitan governance (Ostrom, 1972; McGinnis, 1999) and the political economy of urban public goods (Oakerson, 1999; Ostrom, Bish, & Ostrom,1988). Later work around the idea that polycentric systems with many overlapping decision centers often outperform localities with few overlapping decision centers (Ostrom and Parks 1973a; 1973b; Ostrom, Parks, & Whitaker, 1973; 1978) led to ideas about the commons and common pool resources, as well as ways to analyze institutions (Aligica and Tarko, 2011).

Polycentricity in governance involves not only the vertical federal systems of American governance, but also the numerous horizontal systems therein, whether they be private, public, and/or voluntary (McGinnis and Ostrom, 2011). In such systems, actors can access or be denied access to decision-making, resources, public goods, other actors, institutions, etc. Ostrom and his coauthors also identified two conditions for polycentricity: the freedom of entry and exit of actors and the enforcement of general rules (Ostrom, 1972; McGinnis, 1999). This requires both procedural dynamics and cognitive ones, such as understanding the rules and their consequences (Aligica and Tarko, 2011). This idea of both formal overlapping systems and mental models about the 'rules of the game' aligns well with system thinking. Recent polycentricity literature has emphasized the need for these overlapping systems to meaningfully collaborate to solve complex issues (Andersson and Ostrom, 2008). Much work on agrarian and rural communities around the world also emphasizes the global polycentric nature of land use, food, and agriculture systems (Temper, 2018; Belesky and Lawrence, 2018; Wesz Jr., et al., 2021; Wang and Buck, 2023). Thereby, we aim to link systems thinking and polycentricity in this study, as we begin from the assumption that rural communities are indeed complex systems, but also recognize that rural issues stem from multiple polycentric decision-making centers and the complexities therein, including local governments and vertical and horizontal systems that might be private, public, and/or voluntary.

METHODOLOGY

Based on our research aims and this theoretical framework, we put forth the following propositions:

> *Rural communities often conceive of the complexities of their problems as a combination of resource deprivation, degradation, and population decline caused by* ***external*** *factors, such as urban hegemony and a general forgetting of rural communities. Even so, many rural communities express a sense of hope that change could be possible with the right* ***internal*** *collaboration and leadership. They further understand the complexities as the product of overlapping systems and structures.*

We rely on qualitative analysis of thirty-five semi-structured interviews conducted in two rural Oklahoma counties. Interviewees included local residents, locals who left for a period of time and returned, and non-local residents. All interviews were conducted in summer 2021 by researchers living in the communities for field work[2]. The sample is a purposive modified snowball, informed initially by the researchers' embeddedness in the community and expanded through a snowball approach (Creswell & Poth, 2016). Interviews were conducted in-person using a semi-structured interview protocol and ranged from 30-75 minutes. The interview protocol asked a variety of questions on life in rural Oklahoma, focusing on the quality-of-life perceptions, political capacity, problem and solution identification, trust, and political participation. Ottr.ai was used to record the interviews, which were then fully transcribed and anonymized.

To analyze these interviews, we developed a codebook, beginning with insights from systems thinking literature and with parent code categories for *events*, *patterns of behavior*, and *mental models*. We coded at the statement level which we define as a complete idea expressed about a behavior, event, or mental model as expressed by rural interviewees. Statement length varied from a partial sentence to multiple sentences, depending on the interviewee and topic of interest. From this, we then inductively determined sub-codes under each of these code categories based on interview patterns and context. This form of abductive reasoning (Timmermans and Tavory, 2022) allows for discernment of patterns and analytical conclusions without the establishment of a comprehensive codebook *a priori*. For the complete codebook, see Appendix A.

All interviews were coded in the qualitative data analysis software atlas.ti. The codebook itself achieved intercoder agreement across both coders on the coding team; where there was disagreement, sub-codes were dropped or combined with existing sub-codes until 100 percent agreement was achieved. Each coder then coded half of the interviews and then reviewed the half of the interviews of the other coder. Greater than eighty percent intercoder reliability was achieved.

In terms of our choice of theoretical lens, methods, and below results, we specifically aim to avoid confirming, contextualizing, or using a theory to explain the self-reported perceptions of rural residents in this study. Instead, we aim to extrapolate conclusions from the *perceptions*—whether or not these are based in reality and quantitative fact—of rural residents of the complexity of their communities. From their point of view, their reports are real problems, and understanding how to address problems as perceived by rural residents themselves may help to address well-documented feelings of exclusion in decision-making and political life. This is in contrast to interpreting problems through a non-local lens and prescribing solutions that are often not suited to complex problems.

[2] Research was conducted under approval from Oklahoma State University Institutional Review Board #21-232.

Table 1. Code Frequency Summary

Interviews	**Frequency (N = 35)**
Interviewee Origin	
Non-Local	18
Local	9
Local Returnee	8
Parent Code	**Frequency (N = 1250)**
Behavior	
Sub-Codes	12
Coded Statements	250
Event	
Sub-Codes	7
Coded Statements	261
Mental Model	
Sub-Codes	18
Coded Statements	230
System	
Sub-Codes	11
Coded Statements	509

RESULTS

The coded data were analyzed qualitatively in atlas.ti. Table 1 presents a summary of interviewees and coding frequencies. Due to the very small size of these communities and the desire of both the interviewees and researchers to preserve the greatest degree of anonymity, we omit any specific demographic data that might render our respondents identifiable. However, we can say that our sample was roughly half male and half female; predominantly white; ranging in age from their twenties to seventies, with most between forty and sixty years of age; and encompassing both blue- and white-collar professions, ranging from farmer to public servant to attorney to politician. Table 1 indicates that roughly half of interviewees identified themselves as non-local residents of the local communities in question, while half identified as local. However, approximately half of the local residents had spent some time away from their rural community before returning, which we designate as local returnee.

Figure 1 displays the top occurring sub-codes graphically by frequency and by code group. While *behavior*, *mental model*, and *event* occur at roughly similar percentages, *system* occurs at more than twice any of the other code group. Additionally, half of the top ten sub-codes (*deprivation*, *economy*, *infrastructure*, *brain drain*, and *degradation*) refer to *systems*. This potentially indicates that while all of these four ways of thinking influence how rural residents think about themselves, they most often recognize systems as impacting their communities.

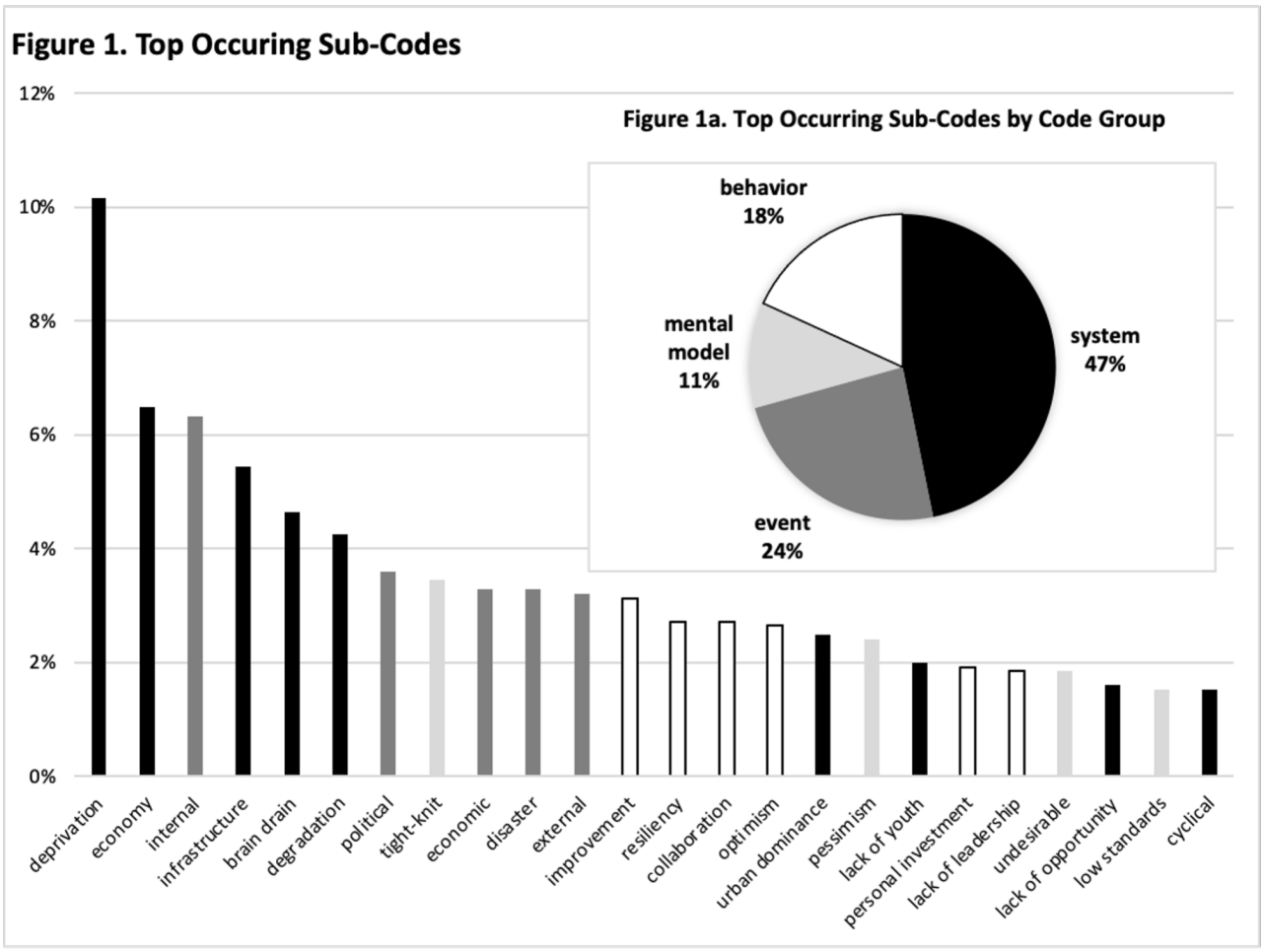
Additionally, Table 2 shows the correlation coefficients for the top co-occurring sub-codes. Only correlation coefficients of 0.20 or higher are included here (for a complete table of coefficients of 0.10 or higher, see Appendix B). Table 2 shows some of the most significant reasons that rural residents report as challenges, such as *internal* and *disaster*, an example of which includes opioid addiction issues and economic issues like the shuttering of a number of local businesses. Co-occurring codes such as *external* and *political* exemplify the frequently expressed frustration that politicians at the state level consistently neglected the needs of rural communities in favor of urban ones, even when those politicians came from rural communities. *Lack of youth* and *brain drain* also occurred together frequently, as a depletion of intellectual and cognitive resources was consistently associated by interviewees with the mass exodus of young people due to a lack of opportunities. Other internal issues are exemplified by the frequent co-occurrence of *low standards* and *apathy*, which emphasizes a resignation of rural residents to low standing and apathy in regard to the condition of their communities in some instances due to long periods of degrading infrastructure, progressively decreasing resources and economic base, and consistent lack of external political advocacy. However, other significant codes also expressed *optimism* through the *improvement* of internal issues, particularly via *collaboration*. Furthermore, many of these codes such as disenfranchisement or lack of opportunity, show an acknowledgement of overlapping systems, indicating an acute understanding of how complex these problems are and the multiple decision-making centers from which they emerge.

Table 2. Co-Occurring Sub-Codes Correlations

Co-Occurring Sub-Codes	**Count**	**Coeff.**
internal-disaster	34	0.40
optimism-improvement	18	0.33
external-political	20	0.31
improvement-collaboration	14	0.24
resource deprivation-infrastructure	38	0.24
low standards-apathy	10	0.23
political-internal	23	0.23
lack of youth-brain drain	15	0.22
infrastructure-degradation	20	0.20

DISCUSSION

A number of patterns emerge from these codes. Firstly, rural residents understand their issues as structural and influenced heavily by external factors, such as urban dominance and resource deprivation and inequities, as captured by one interviewee: ‘State decision makers don’t always know how to help the rural areas. Because even oftentimes, even the rural area representatives come from the larger townships of the rural area. So, they



Note: Only the top 82% of sub-codes are displayed in this graph for readability. Only codes that occurred at least 2% were included.

Figure 1. Top Occurring Sub-Codes

really don't know what the smaller community issues are.' Such resource deprivation was exemplified most frequently in the expression of 'brain drain' amongst interviewees, the concept that the youth raised and educated in the community frequently left the rural community to pursue opportunities in urban centers. Many interviewees expressed variations on the following statement: 'A lot of them don't [stay]. Especially the ones that got some ambition, which is the ones that you would like to keep; they're going to go out and explore opportunities elsewhere.' Some further addressed the death of older generations as compounding the problem: 'I really don't know because right now. Our elderly are dying out. And the young people are growing. And they don't seem to have [...] the interest. All they think about is moving away. So, it's gonna leave almost like a skeleton, I'm afraid, if someone doesn't take charge.'

Further, a number of interviewees also expressed feelings of a lack of representation and disenfranchisement in state politics. For example: 'And a lot of times it feels like out here in low population areas that we don't have much voice, that even when we elect somebody, and we send them to the Capitol, the influences that are there that have money, have resources ... that their voices get heard a whole lot more than, than ours do out here.' Even so, this lack of representation, as well as problems attributed to politics were rarely defined as liberal vs. conservative issues, but rural vs. urban issues. This finding warrants more research, as it indicates underlying identity issues associated with the rural-urban divide for which political affiliation may be serving as a proxy.

A number of internal issues were also addressed that seemed to both compound and be compounded by external issues. One of those was the small workforce and lack of individuals and businesses moving to the area, couples with people moving out. This contributed to substantial economic issues, such as: 'But I've often said that in order to grow, you need jobs, workforce or housing. Okay, I don't think you're going to get one without the other two being there. So, you're not going to get some large

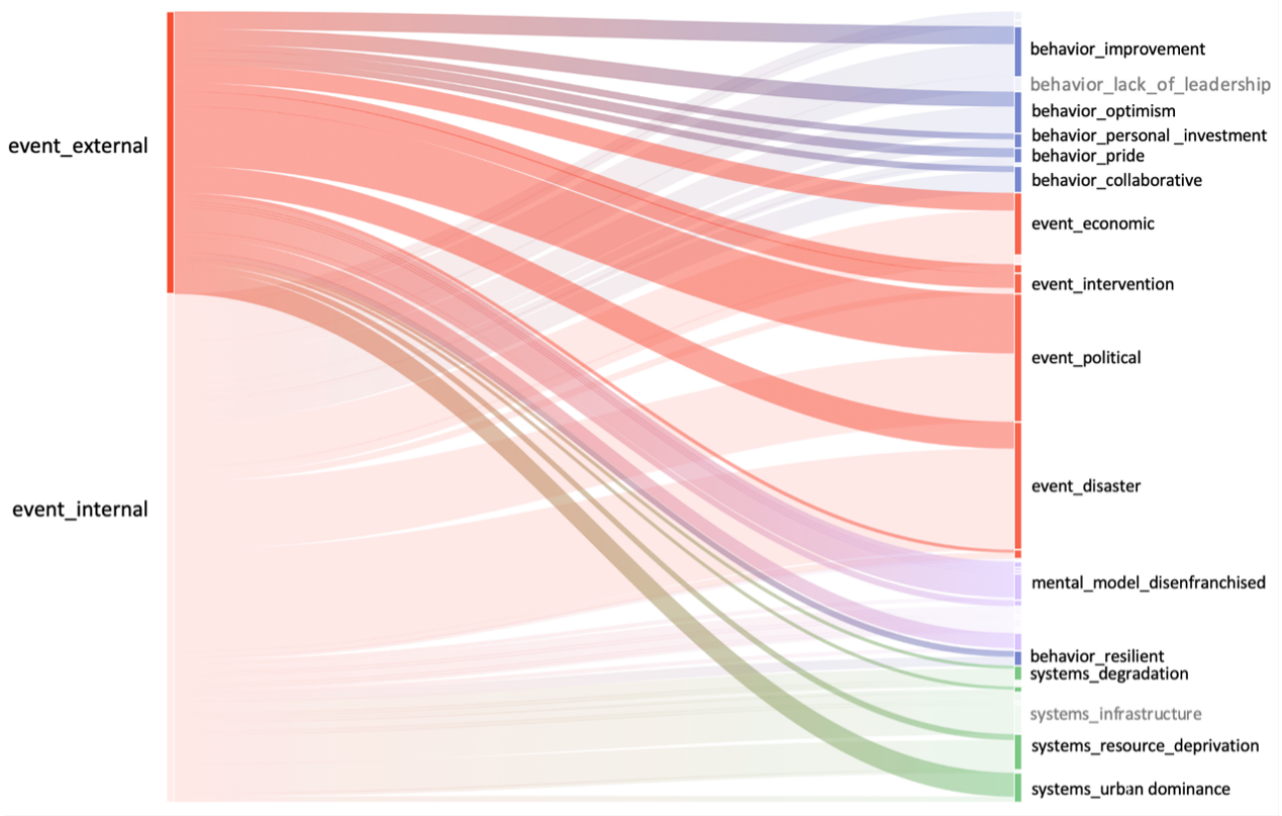


Figure 2. Statistical Overlap of Codes as Internal and External Phenomena

employer, you know, somebody that's going to come in, employ 50 or 100 or 200 people, because those people aren't here to work. Those people aren't going to move here, because there's no houses for him to live in. And there's no job for him. So, you're not gonna get nobody's gonna build houses without there being demand. So, you're not gonna get anything all at once.' Similarly, the low and declining population was identified as impacting tax revenue: 'There's not enough people here, not enough tax base to fix the problems that we have.'

Beyond those economic issues, a number of mental and physical health issues were consistently brought up. Such issues largely centered around mental health and substance abuse problems that these rural areas did not have the programs or infrastructure to address. For example, 'I believe substance abuse is a problem. I believe mental health is a problem. We've got a lot of people that kind of walk the streets and talk to themselves ...'

These dynamics contribute to feelings of apathy and pessimism in these rural communities that contribute to cyclical dynamics in which the few rich residents, primarily large agricultural producers, remain rich; the poor remain poor; and infrastructure continues to degrade. For example: 'But I think that if there's not any desire to grow, and to become better, and people just stay here and follows in the footsteps ... poor breeds the poor.' All of these dynamics contribute substantially to a crumbling infrastructure, the most often expressed issue in rural communities.

Similarly, while apathy and pessimism are frequently expressed, many residents did believe that change was possible via internal intervention and personal investment from residents, and particularly by retaining the youth population: 'I think you've got to involve the youth, but good quality people in forming a committee or group of people to try and tackle some of these parts and some of these issues. And even if it's a small thing ... if they can build a flower bed.' This often also included nostalgic elements: 'Again it's going to take people volunteering and planning and investing in the future is one of the things that I've said many times when we were working on economic development ... there was a group of people in the early 1900s that built this community. They invested, they sacrificed, and they built this downtown and this infrastructure.' Ideas about resiliency were further accompanied by ideas about loyalty to the community that raised them: 'My parents were blue collar workers. We [...] were very poor when I was little. And I was given a really good education. Just like the really wealthy kids in this town. I was not treated any differently. And so just from that perspective, I felt like that was my duty to give back because my commu-

nity and my school took care of me no matter what, and then having a child. I mean, [...] there's another interest right there and just, you know, if I can do my part to make sure that our school system continues to excel, then I just in my opinion, that's what you do.' Ideas about familiarity and its ability to catalyze resilience and improvement also appeared frequently: 'I never have a problem that I don't have a solution for. I can have my plumbing go out on Sunday; I know the local plumber and get a plumber out on Sunday. Any kind of problems I have, there's enough people that I know and can reach out to them. You know, it really doesn't matter what day of the week or time of the day or whatever.'

This indicates that while locals acknowledge behaviors and events that contribute to rural degradation, they understand their issues and ongoing infrastructure degradation as systemic issues with multiple, complex, and interconnected dynamics, both internal and external. This is particularly exemplified in Table 2, as distinct co-occurring code pairs portray both internal and external issues that interact with one another. Figure 2 visually represents this complexity in that both internal and external events intersect with a number of other issues, such as brain drain, infrastructure, etc. Rural residents, in contrast to externalizing their issues, assume both internal apathy and resolve in various situations, adding complexity and nuance to previously underexplored dynamics in rural communities. This corroborates many of the trends and patterns discerned above, and largely supports our proposition.

CONCLUSION

Based on our qualitative analysis, we find that rural residents conceive and self-report their community issues as a complex, interconnected web of both internal and external factors and systems. These systems incorporate both path-dependent perceptions about rural areas and the associated behaviors and consequences that accompany such perceptions, as well as modern issues brought about by the opioid crisis, COVID-19, and economic constraints.

While these findings are corroborated across nearly all interviews, our study is not without limitations. Our codebook is based in soft systems methodology literature, yet qualitative coding always leaves room for questions of replicability. We did, however, achieve high intercoder reliability among our team to ameliorate such concern to the greatest degree possible. Additionally, our data draws from a small sample in rural Oklahoma, which raises questions of generalizability to the rest of the United States. While many of the issues reported in the interviews are consistent with broader literature, comparative studies across different states present promising directions for future research.

Finally, and perhaps most notably, we observe very little mention of political affiliation or ire in regard to liberal versus conservative ideological dynamics. Instead, it appears that many issues are conceived of as being caused by a widening urban-rural divide. This divide, while not without ideological dimensions, appears to be deeply rooted in identity and conceptions of the self. When identity is under attack, it facilitates out-group hate (Mason, 2018) and deepening polarization. This finding warrants further study, not least of all for its implications for widening cultural divides and the consequences for democracy.

Rural-urban dynamics map closely onto conservative-liberal political dynamics in the United States, potentially providing important insights to polarization and discontent between political parties in the U.S. political landscape. What is notable, however, is that rural communities do not necessarily attribute their own issues to overtly political dynamics, but rather to complex systems and historical path dependencies. Rural communities think a great deal not only about how they have contributed and might be able to solve their own issues internally, but also to how external factors complicate and/or compound these efforts. In other words, rural communities think about urban communities and their spatial relationship between rural and urban areas. What we cannot say is whether urban areas expend similar mental effort in regard to how urban hegemony might impact rural life. This is a question that warrants study, as a neglect of urban consideration or rurality and what it means for the life of the people in these areas likely has significant implications for issues of inclusion and may potentially be contributing to identity-based polarization that is only superficially political, but more deeply and culturally tied to place.

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REFERENCES

Ackoff, R. 1962. 'Some Unsolved Problems in Problem Solving.' *Operational Research Quarterly* 13(1): 1-11.

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https://doi.org/10.1057/jors.1962.1

Aligica, P.D. and Tarko, V. 2011. 'Polycentricity: From Polanyi to Ostrom, and Beyond.' *Governance* 25(2): 237-262. https://doi.org/10.1111/j.1468-0491.2011.01550.x

Andersson, K.P. and Ostrom, E. 2008. 'Analyzing Decentralized Resource Regimes from a Polycentric Perspective.' *Policy Sciences* 41: 71-93. https://doi.org/10.1007/s11077-007-9055-6

Aylesworth, L.S. and Bloom, B.L. 1976. 'College experiences and problems of rural and small-town students.' *Journal of College Student Personnel* 17(3): 236-242.

Barker, B.O. 1985. 'Understanding Rural Adult Learners: Characteristics and Challenges.' *Lifelong Learning* 9(24).

Bates, A. 2013. 'Transcending Systems Thinking in Education Reform: Implications for Policy-Makers and School Leaders.' *Journal of Education Policy* 28(1): 38-54. https://doi.org/10.1080/02680939.2012.684249

Bateson, R. 2023, forthcoming. 'Finding Meaning in Politics: When Victims Become Activists.' *American Political Science Review*.

Belesky, P. and Lawrence, G. 2018. 'Chinese State Capitalism and Neomercantilism in the Contemporary Food Regime: Contradictions, Continuity, and Change.' *Journal of Peasant Studies* 46(6): 1119-1141. https://doi.org/10.1080/03066150.2018.1450242

Bell, M.M. 2007. 'The two-ness of rural life and the ends of rural scholarship.' *Journal of Rural Studies* 23(4): 402-415. https://doi.org/10.1016/j.jrurstud.2007.03.003

Bolognesi, T., Metz, F., and Nahrath, S. 2021. 'Institutional Complexity Traps in Policy Integration Processes: A Long-Term Perspective on Swiss Flood Risk Management.' *Policy Sciences* 54: 911-941. https://doi.org/10.1007/s11077-021-09443-1

Bosch, O.J.H., King, C.A., Herbohn, J.L., Russell, I.W., and Smith, C.S. 2007. 'Getting the Big Picture in Natural Resource Management—Systems Thinking as 'Method' for Scientists, Policy Makers, and Other Stakeholders.' *Systems Research and Behavioral Science* 24(2): 217-232. https://doi.org/10.1002/sres.818

Bosch, O.J.H., Maani, K., and Smith, C.S. 2007. 'Systems Thinking–Language of Complexity for Scientists and Managers.' Conference paper. University of Queensland.

Cabrera, D., Colosi, L., and Lobdell, C. 2008. 'Systems Thinking.' *Evaluation and Program Planning* 31(3): 299-310. https://doi.org/10.1016/j.evalprogplan.2007.12.001

Capra, F. 1997. *The Web of Life: A New Synthesis of Mind and Matter*. London: Flamingo.

Carr, P.J. and Kefalas, M.J. 2010. *Hollowing Out the Middle: The Brain Drain and What It Means for America*. Beacon Press.

Champion, A. 2012. 'Europe's Rural Demography.' In L.J. Kulcsar & K.J. Curtis (Eds.), *International Handbook of Rural Demography*, pp. 81-93. Springer.

Checkland, P. 1981. *Systems Thinking, Systems Practice*. Wiley.

Checkland, P. 1999a. 'Systems Thinking" In W. Currie and B. Galliers (eds.) *Rethinking Management Information Systems: An Interdisciplinary Perspective*, pp. 45-56. Oxford University Press.

Checkland, P. 1999b. *Systems Thinking, Systems Practice: Includes a 30-Year Retrospective*. Wiley.

Checkland, P. 2000. 'Soft Systems Methodology: A Thirty Year Retrospective.' *Systems Research and Behavioural Science* 17: 11-58.

Checkland, P. and Scholes, J. 1990. *Soft Systems Methodology in Action*. Wiley.

Churchman, C. 1963. 'The X of X.' *Management Science* 9(3): 351-357.

Coenders, M., Lubbers, M., & Scheepers, P. 2003. 'Majorities' attitudes towards minorities in European Union member states.' European Monitoring Centre on Racism and Xenophobia. Ref. no. 2003/04/01.

Collins, K., Blackmore, C., Morris, D., and Watson, D. 2007. 'A Systemic Approach to Managing Multiple Perspectives and Stakeholding in Water Catchments: Some Findings from Three UK Case Studies.' *Environmental Science and Policy* 10: 564-574. https://doi.org/10.1016/j.envsci.2006.12.005

Cramer, K.J. 2016. *The Politics of Resentment: Rural Consciousness in Wisconsin and the Rise of Scott Walker*. University of Chicago Press.

Creswell, J.W. and Poth, C.N. 2016. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Sage Publications.

Cundill, G., Cumming, G.S., Biggs, D., and Fabricus, C. 2011. 'Soft Systems Thinking and Social Learning for Adaptive Management.' *Conservation Biology* 26(1): 13-20. https://doi.org/10.1111/j.1523-1739.2011.01755.x

Dodgson, M., Hughes, A., Foster, J., and Metcalfe, S. 2011. 'Systems Thinking, Market Failure, and the Development of Innovation Policy: The Case of Australia.' *Research Policy* 40(9): 1145-1156. https://doi.org/10.1016/j.respol.2011.05.015

Doherty, I.A., Pilkington, W., Brown, L., Billings, V., Hoffler, U., Paulin, L., Kimbro, K.S., Baker, B., Zhang, T., Locklear, T., Robinson, S., and Deepak, K. 2021. 'COVID-19 vaccine hesitancy in underserved communities of North Carolina.' *PLOSONE*. https://doi.org/10.1371/journal.pone.0248542

Farm Flavor Oklahoma. 2024. "Oklahoma Agriculture".

Finlayson, S.R.G. 2005. 'Surgery in Rural America.' *Surgical Innovation* 12(4): 299-305. https://doi.org/10.1177/155335060501200403

Forrester, J.W. 1956. 'Dynamics Models of Economic Systems and Industrial Organization.' Memo. Sloan School of Management, MIT.

Gabehart, K.M. 2022. 'Rural Society, Democratic Exclusion, and the Cultural Divide: Moving Towards a Research Agenda of the Study of Ruralness' *Public Integrity*. https://doi.org/10.1080/10999922.2022.2061132

Gale, J.A., Hansen, A., Williamson, M. 2017. *Rural Opioid Prevention and Treatment Strategies: The Experience in Four States*. Portland ME: University of Southern Maine, Muskie School, Maine Rural Health Research.

Gray, W. and Rizzo, N.D. 1973. *Unity Through Diversity: A festschrift for Ludwig von Bertalanffy*. New York: Gordon and Breach.

Harrison, E. and Chiroro, C. 2026. 'Differentiatied Legitimacy, Differentiated Resilience: Beyond the Natural in "Natural Disasters." *Journal of Peasant Studies* 44(5): 1022-1042. https://doi.org/10.1080/03066150.2016.1193011

Haynes, A., Garvey, K., Davidson, S., and Milat, A. 2020. 'What Can Policy-Makers Get Out of Systems Thinking? Policy Partners' Experiences of Systems-Focused Research Collaboration in Preventive Health.' *International Journal of Health Policy and Management* 9(2): 65-76. 10.15171/ijhpm.2019.86.

Herzog, M.J., & Pittman, R.B. 1995. 'Home, family, and community: Ingredients in the rural education equation.' Department of Administration, Curriculum, and Instruction, West Carolina University.

Hoge M.A., Stuart, G.W., Morris, J., Flaherty, M.T., Paris, M., and Goplerud, E. 2013. 'Mental Health and Addiction Workforce Development: Federal Leadership is Needed to Address the Growing Crisis.' *Health Affairs* 32(11):2005-2012. https://doi.org/10.1377/hlthaff.2013.0541

Holt-Giménez, E., Shattuck, A., and Van Lammeren, I. 2021. 'Thresholds of Resistance: Agroecology, Resilience, and the Agrarian Question.' *Journal of Peasant Studies* 48(4): 715-733. https://doi.org/10.1080/03066150.2020.1847090

Ison, R., Roling, N., Watson, D. 2007. 'Challenges to Science and Society in the Sustainable Management and Use of Water: Investigating the Role of Social Learning.' *Environmental Science and Policy* 10: 499-511. https://doi.org/10.1016/j.envsci.2007.02.008

Jones, E.B. 2018. 'Medication-Assisted Opioid Treatment Prescribers in Federally Qualified Health Centers: Capacity Lags in Rural Areas.' *Journal of Rural Health* 34(1): 14-22. https://doi.org/10.1111/jrh.12260

Kricorian, K., Civen, R., and Equils, O. 2021. 'COVID-19 Vaccine Hesitancy: Misinformation and Perceptions of Vaccine Safety.' *Human Vaccines and Immunotherapeutics*. https://doi.org/10.1080/21645515.2021.1950504

McGinnis, M.D. 1999. *Polycentricity and Local Public Economies: Readings from the Workshop in Political Theory and Policy Analysis*. Ann Arbor, MI: University of Michigan Press.

McGinnis, M.D. and Ostrom, E. 2011. 'Reflections on Vincent Ostrom, Public Administration, and Polycentricity.' *Public Administration Review* 72(1): 15-25. https://doi.org/10.1111/j.1540-6210.2011.02488.x

McConnell, A., Grealy, L., and Lea, T. 2020. 'Policy Success for Whom? A Framework for Analysis.' *Policy Sciences* 53: 589-608. https://doi.org/10.1007/s11077-020-09406-y

Maani, K., and Cavana, R. (2007). Systems Thinking and Modelling - Managing Change and Complexity, 2nd edition. Prentice Hall.

Mason, L. 2018. *Uncivil Agreement: How Politics Became Our Identity*. University of Chicago Press.

Midgley, G. Richardson, K.A. 2007. 'Systems Thinking for Community Involvement in Policy Analysis.' *E:CO* 9(1): 167-183.

Mingers, J. 1980. 'Towards an Appropriate Social Science Theory for Applied Systems Thinking: Critical Theory and Soft Systems Methodology.' *Journal of Applied Systems Analysis* 7: 41-50.

Mingers, J. and White, L. 2010. 'A Review of the Recent Contribution of Systems Thinking to Operational Research and Management Science.' *European Journal of Operational Research* 3(16): 1147-1161. https://doi.org/10.1016/j.ejor.2009.12.019

Oakerson, R.J. 1999. *Governing Local Public Economies: Creating the Civic Metropolis*. Ithaca, NY: ICS Press.

Ostrom, E., Parks, R.B. 1973a. 'Suburban Police Departments: Too Many and Too Small?' In L. H. Masotti and J. K. Hadden (eds.) *The Urbanization of the Suburbs*, Beverly Hills, CA: Sage.

Ostrom, E., Parks, R.B. 1973b. 'Neither Gargantua nor the Land of Lilliputs: Conjectures on Mixed Systems of Metropolitan Organization.' In M.D. McGinnis (ed.) *Polycentricity and Local Public Economies: Readings from the Workshop in Political Theory and Policy Analysis*, Ann Arbor, MI: University of Michigan Press.

Ostrom, E., Parks, R.B. and Whitaker, G.P. 1973. 'Do We Really Want to Consolidate Urban Police Forces? A Reappraisal of Some Old Assertions.' *Public Administration Review* 33: 423-432. https://doi.org/10.2307/974306

Ostrom, V. 1972. 'Polycentricity.' Workshop Working Paper Series, Workshop in Political Theory and Policy Analysis, Presented at the Annual Meeting of the American Political Science Association, September 5-9.

Ostrom, V., Bish, R., and Ostrom, E. 1988. *Local Government in the United States*. Ithaca, NY: ICS Press.

Ostrom, V., Tiebout, C.M., and Warren, R. 1961. 'The Organization of Government in Metropolitan Areas: A Theoretical Inquiry.' *American Political Science Review* 55: 831- 842. https://doi.org/10.2307/1952530

Polanyi, M. 1951. *The Logic of Liberty*. Chicago, IL: University of Chicago Press.

Probst, J., Eberth, J.M., and Crouch, E. 2019. 'Health Outcomes for Rural America.' *Rural Health* 38(2).

Michael Ratcliffe, Charlynn Burd, Kelly Holder, and Alison Fields. 2016. 'Defining Rural at the U.S. Census Bureau.' ACSGEO-1, U.S. Census Bureau, Washington, DC.

Ribot, J. 2014. 'Cause and Response: Vulnerability and Climate in the Antropocene.' *Journal of Peasant Studies* 41(5): 667-705. https://doi.org/10.1080/03066150.2014.894911

Shucksmith, M., Chapman, P., Clark, G., & Black, S. 1994. 'Social welfare in rural Europe.' *Journal of Rural Studies*, 10(4), 343-356. https://doi.org/10.1016/0743-0167(94)90044-2

Simon, H.A. 1960. *The New Science of Management Decision Making*. Harper & Row.

Spleen, A.M., Lengerich, E.J., Camacho, F.T., and Vanderpool, R.C. 2015. 'Health Care Avoidance Among Rural Populations: Results from a Nationally Representative Survey.' *Journal of Rural Health 30*(1). https://doi.org/10.1111/jrh.12032

USDA. 2023. "State Data: Oklahoma". Economic Research Service. U.S. Department of Agriculture. Updated November 30, 2023.

Stewart, J. and Ayres, R. 2001. 'Systems Theory and Policy Practice: An Exploration.' *Policy Sciences* 34: 79-94. https://doi.org/10.1023/A:1010334804878

Sun, Y., Cheng, K., Jason, G., and Monnat, S.M. 2022. 'Rural-Urban and Within-Rural Differences in COVID-19 Mortality Rates.' *Journal of Rural Social Studies* 37(2).

Swann, W.L., Kim, Sojeong, Kim, Serena, and Schreiber, T.L. 2020. 'Urban-Rural Disparities in Opioid Use Disorder Prevention and Response Activities: A Cross Sectional Analysis.' *The Journal of Rural Health*: 1-7. https://doi.org/10.1111/jrh.12491

Temper, L. 2018. 'From Boomerangs to Minefield and Catapults: Dynamics of Trans-Local Resistance to Land-Grabs.' *Journal of Peasant Studies* 46(1): 188-216. https://doi.org/10.1080/03066150.2017.1398144

Timmermans, S., & Tavory, I. 2022. *Data Analysis in Qualitative Research: Theorizing with Abductive Analysis*. University of Chicago Press.

Ulrich-Schad, J.D. and Duncan, C.M. 2018. 'Peoples and Places Left Behind: Work, Culture, and Politics in the Rural United States.' *Journal of Peasant Studies* 45(1), 59-79.

U.S. Census Bureau. 2020. "State-level 2020 and 2010 Census Urban and Rural Information for the U.S., Puerto Rico, and Island Areas sorted by state FIPS cods." U.S. Census Bureau.

U.S. Census Bureau. 2022. "Poverty Status in the Past 12 Months." United State Census Bureau.

U.S. Census Bureau. 2023a. "QuickFacts Oklahoma." United State Census Bureau.

U.S. Census Bureau. 2023b. "Annual Gross Domestic Product (GDP) by State." United States Census Bureau.

Vickers, G. 1965. *The Art of Judgement*. London: Chapmand and Hall.

von Bertalanffy, L. 1968. *General System Theory*. New York: Braziller.

Wakefield, M.K. 1990. 'Health Care in Rural America: A View from the National Capital.' *Nursing Economics* 8(2): 83-89.

Walter-Toews, D., Neudoerffer, C., Joshi, D.D., and Tamang, M.S. 2005. 'Agro-Urban Ecosystem Health Assessment in Kathmandu, Nepal: Epidemiology, Systems, Narratives.' *EcoHealth* 2: 155-164.

Wang, K., and Buck, D. 2023. 'Relocating Agrarian Development in Asia: Food Regimes, R&D Programs, and the Long Twentieth Century.' *Journal of Peasant Studies*. https://doi.org/10.1080/03066150.2023.2210510

Wesz Jr., V.J., Escher, F., and Fares, T.M. 2021. "Why and How is China Reordering the Food Regime? The Brazil-China Soy-Meat Complex and COFCO's Global Strategy in the Southern Cone.' *Journal of Peasant Studies* 50(4): 1376-1404. https://doi.org/10.1080/03066150.2021.1986012

Wimmer, A. 1997. 'Explaining xenophobia and racism: A critical review of current research Approaches.' *Ethnic and Racial Studies*, 21(1), 17-41. https://doi.org/10.1080/01419870.1997.9993946

Woodger, J. 1929. *Biological Principles: A Critical Study*. London: Keegan, Paul, and Co.

Yin, R.K. 2003. *Case Study Research: Design and Methods*. SAGE Publishing.

APPENDIX A: CODE BOOK

Codebook for Interview Transcription
Systems Thinking & Rural Communities in Oklahoma

Coding Instructions

- Coders should read through the full interview transcript prior to beginning coding.
- Coders should review codebook before coding.
- When coding, coders should:
  - Code entire sentences or paragraphs, depending on the extent of the discussion of a single topic in a response. Include any necessary contextual information around that sentence and/or paragraph (when appropriate or necessary).
  - Code for a single category of code at a time (i.e., code entire document for a single category code and its subcategories before moving onto the next category and its subcategory)
  - Code segments of text into multiple codes, if appropriate (i.e., codes are not mutually exclusive)
  - Treat the category code as a bin to put text that should be under the broad category but may not fit within one of the subcategory codes.
    - After coding, return to this super-code to determine if additional sub-codes should be created.

Codebook

Systems Thinking: Four Levels of Operation Approach

This codebook is derived from the systems thinking that emphasizes a holistic approach to analysis that focuses on the way that a system's constituent parts interrelate and how systems work over time and within the context of larger systems (Forrester, 1956).

Note: Parent codes in caps, codes in bold.

- **EVENTS**—'The level where people become aware of things in the world—through a noticeable change at home, workplace, city, the nation, or in the world.'
  - Domain
    - **Internal**—Happening within the community that is the focus of interview.
    - **External**—Happening outside the community that is the focus of interviews.
  - Event Realm
    - **Personal**—Related to person events.
    - **Economic**—Related to economic/financial events.
    - **Political**—Related to political events/policies/political representatives.
    - **Disaster**—Related to disasters, i.e., natural, mental health, substance abuse, etc.
- **PATTERNS OF BEHAVIOR**—'A larger set of events are linked ... show changes and trends over an extended period of time.'
  - **Collaborative**—Related to collaborative efforts, community collaboration.
  - **Gatekeeping**—Related to control of access to resources, etc.
  - **Resilient**—Related to the idea of withstanding or recovering from difficult conditions.
  - **Apathy**—Related to uncaring, lack of action.
  - **Gossip**—Related to rumors pertaining to individuals not involved in conversation in question.
  - **Exclusivity**—Related to the idea that belonging in a rural community is exclusive; idea that newcomers are not welcome.
  - **Lack of Leadership**—Related to a lack of leadership in rural community.
  - **Optimism**—Related to positive attitude about outcomes or potential of rural community.
  - **Pessimism**—Related to negative attitude about outcomes or potential of rural community.
  - **Pride**—Related to general pride and value expressed towards rural community.
  - **Improvement**—Related to community improvement or ideas about potential improvement.
  - **Personal Investment**—Related to individuals investing effort or resources in bettering community.
  - **Status Quo**—Related to behaviors or lack of behaviors that reinforce the status quo.

- **SYSTEMS**—'How trends and patterns relate to and affect one another.'
  - **Sustainability**—Related to idea that condition or community is sustainable over time.
  - **Degradation**—Related to deterioration of conditions, infrastructure, well-being, resource allocation, etc. in rural communities.
  - **Taxation**—Related to system of taxation that allocated money to rural communities.
  - **Status Quo**—Related to system of maintaining current conditions.
  - **Brain Drain**—Related to the exit of high income, highly intelligent individuals from communities to suburban and urban center. Often referring to youth departure.
  - **Infrastructure**—Related to the physical infrastructure of community.
  - **Lack of Youth**—Related to lack of youth presence and/or participation in community.
  - **Cyclical**—Related to system of reinforcing norms that perpetuate particular, systems, behaviors, and mental models.
- **MENTAL MODELS**—'*Why* things work the way they do. Mental models reflect the beliefs, values, and assumptions that we personally hold, and they underlie our reasons for doing things the way we do' (see Bosch, Maani & Smith, 2007; Maani and Cavana, 2000).
  - **Tight-Knit**—Related to idea that rural communities and citizens are communal.
  - **Quiet**
  - **Independent**—Related to ideas that rural communities are independent and do not need assistance from urban centers, other communities, and/or the state.
  - **Familiarity**—Related to the idea that 'everybody knows everybody.'
  - **Nostalgia**—Related to desire to keep things as they have always been; harkening to a bygone past that may or may not have ever existed.
  - **Pessimism**—Related to pessimistic behavior but related to the community and its potential on the whole.
  - **Undesirable**—Related to the ideas that rural communities are undesirable for individuals, businesses, other interests to remain in, move to invest in.
  - **Forgotten**—Related to the idea that rural communities and people are forgotten in relation to urban and suburban centers.
  - **Conservatism**—Related to predominantly conservative political beliefs.
  - **Diversity**—Related to diversity of lack thereof in rural communities.
  - **Low Standards**—Related to generally low standards rural individual have for themselves and their communities, i.e., maintaining status quo, poor nutrition, etc.
  - **Loyalty**—Related to the idea that rural residents, particularly those with deep roots in a community, are loyal to it.

APPENDIX B

Co-Occurring Codes with Coefficient ≥ 0.10

Co-Occurring Sub-Codes	Count	Coefficient
internal-disaster	34	0.40
optimism-improvement	18	0.33
external-political	20	0.31
improvement-collaboration	14	0.24
resource deprivation-infrastructure	38	0.24
low standards-apathy	10	0.23
political-internal	23	0.23
lack of youth-brain drain	15	0.22
infrastructure-degradation	20	0.20
status quo-apathy	8	0.19
political-disenfranchised	9	0.19
external-disenfranchised	8	0.19
resiliency-improvement	8	0.19
personal investment-collaboration	9	0.18
pride-personal investment	6	0.18
pride-improvement	8	0.17
pride-optimism	7	0.17
pride-resiliency	4	0.17
optimism-pride	7	0.17
lack of opportunity-brain drain	11	0.16
familiarity-loyalty	4	0.15
resiliency-optimism	6	0.15
political-urban dominance	10	0.15
degradation-apathy	11	0.14
undesirable-brain drain	10	0.14
apathy-degradation	11	0.14
economic-internal	15	0.14
familiarity-tight knit	7	0.14
external-disaster	9	0.13
external-urban dominance	8	0.13
personal investment-improvement	7	0.13
independent-quiet	1	0.13
optimism-collaboration	7	0.12
resiliency-collaboration	5	0.12
external-intervention	5	0.12
status quo-degradation	7	0.11
loyalty-tight knit	6	0.11
resiliency-personal	2	0.11
pessimism-apathy	6	0.10
internal-improvement	11	0.10
status quo-nostalgia	3	0.10