The "Greening" Effect: How Tiny House Communities Shape Residents' Attitudes and Behaviors toward Sustainability

Severin Mangold
Options for Long Term Care, Aging and Adult Services
1501 Blue Spruce Drive, Fort Collins, CO 80524

Hosuk Lee
University of North Georgia, Institute for Environmental & Spatial Analysis
Dunlap Hall 215B, Dahlonega, Georgia 30597

Tony Zschau
University of North Georgia, Department of Sociology and Human Services
Barnes Hall 204, Dahlonega, Georgia 30597

Abstract

Tiny houses have gained popularity around the world in the years following the 2007-2008 global financial crisis. Tiny houses have since been touted as solutions for issues as diverse as affordable housing, financial independence, homelessness and/or sustainability. To date, much of the academic literature has focused on the actual buildings and their inhabitants. Increasingly, more attention is being given to the role tiny houses can play in community settings. This paper adds to this emerging line of research by discussing the results of a secondary data analysis of Mangold (2021)'s study. Analyzing data from ten tiny house communities across the United States, we will show that living in these types of communities can impact residents' environmental views and practices. Drawing on insights from sister movements such as the cohousing literature, we argue that TH communities – and the interpersonal relationships they foster – can offer effective vehicles for creating "greener" communities. Directions for future research are also being discussed.

Keywords: tiny house, communities, sustainability

1. Introduction

The tiny house phenomenon – as a cultural force – arose from the ashes of the 2007-2008 global financial crisis. Faced with widespread home foreclosures, unforeseen job losses, mounting debt, and a general sense of disorientation, many people began to rethink the meaning of a "good life" (Kilman, 2016; Mangold & Zschau, 2019; Mutter, 2013). While "tiny houses" had been around for a long time, the economic recession turned them into a quintessential cure-all for issues as diverse as homelessness (Bartholomew et al., 2019; Evans, 2020; Mingoya, 2015), personal freedom/independence (Boeckermann et al., 2019; Mangold & Zschau, 2019; Mutter, 2013), and environmental sustainability (Hutchinson, 2016; Saxton, 2019; Shearer & Burton, 2018, 2021; Thiel, 2020). Given the scope of this 21st century cultural development, it is surprising how little research exists. Most studies to date have focused on uncovering individual-level motivators and characteristics of tiny living (Boeckermann et al., 2019; Carras, 2019; Ford & Gomez-Lanier, 2017; Jebbink, 2019; Mutter, 2013; Olsson, 2020; Saxton, 2019; Shearer & Burton, 2021) with significantly less attention being paid to the role of tiny houses in community settings as discussed below.

In the United States more than three-hundred tiny house communities exist (*Search Tiny House Villages*, 2020)[1] though much of what we know about these places comes from small case studies and/or anecdotal evidence (Ford & Gomez-Lanier, 2017; Jackson et al., 2020; Mangold, 2021; Mingoya, 2015). Over one hundred of these communities (Evans, 2020). They have been shown to help people connect, reduce social isolation, as well as foster independence. Scholars, however, have also emphasized that there is a real need for studies that document long term outcomes of these communities (Calhoun et al., 2022; Evans, 2022; Zhang et al., 2022).

[1] It is important to note that this site includes tiny house communities that are not just comprised of tiny homes but also of communities with sections of RVs, and backyard parking for tiny homes. Additionally, this site also counts tiny house hotels as a community of two or more tiny houses. There is no official public list of all tiny house communities that we were aware of at the time of writing.

Tiny houses and tiny house communities have entered local and regional policy discussions because they can be built more quickly, cheaply, and – potentially – in a more sustainable fashion (Kilman, 2016; Mingoya, 2015; Turner, 2016). Some even have suggested them as novel solutions in response to the COVID19 Pandemic and the need for social distancing (Calhoun et al., 2022). Others have argued that – at least within an "American" context - these communities are strongly influenced by "sister" movements (Mangold, 2021). Borrowing philosophical ideas from minimalism, voluntary simplicity, and/or cohousing, in particular, TH communities are said to embody values of rugged individualism, personal freedom, and a sense of community that binds their residents together. While a spirit of personal freedom is often written into the communal DNA, some of these communities have made sustainability one of their primary goals (see, for example, Mangold 2021). Reading articles from TH blogs, news sites, and/or social media outlets on this issue, however, may potentially be misleading (Carrizosa, 2021; Kang et al., 2021; R, 2019; Roberts, 2018). While "sustainable community" does matter to *some* (Shearer & Burton, 2021; Willoughby et al., 2020)[2], it remains unclear what role – if any – sustainability plays in the social structures and day-to-day interactions of tiny house communities.

Mangold (2021) was one of the first scholars to explore the actual role of sustainability in tiny communities. His work suggests – among other things – that the nature of interpersonal networks and the degree of social integration largely determines whether residents' behaviors become more environmentally friendly over time. Individual attitudes, in contrast, seem to be much less responsive to social influence. He argues that many of the residents in these communities already held high levels of environmental attitudes prior to moving. While this study was groundbreaking and made important inroads into our understanding of TH community dynamics, the discussion predominantly focused on individual-level explanations. To deepen the network aspect of his analysis, this study thus presents the findings of a new secondary data analysis of Mangold (2021)'s data. Looking at the patterns across ten different tiny house communities, we argue that tiny house communities do impact residents' environmental behaviors over time – though not in a homogenous fashion. The ultimate "greening effect" is subject to *community characteristics* (e.g., density, attachment, centrality), the *nature of eco-domains* and the *types of eco-behaviors* under consideration. We suggest some tentative theoretical explanations for these findings and offer potential avenues for future research.

2. Methods

*Dataset: B*etween October and December of 2020, (Mangold (2021) surveyed ten TH communities in the United States (N = 65, response rate: 36%)[3]. The questionnaire in the research consisted of 32 items capturing five main theoretical themes. (1) Four items measured *pro-environmental attitudes and behaviors* of residents before and after living in these communities. Residents were asked to rate how frequently they have engaged in eleven pro-environmental behaviors, and how strongly they agreed with six environmental attitude statements. Two other questions assessed the importance of sustainability prior to and after living in community. (2) Four items measured *community characteristics* using standard social network analysis (SNA) variables. Centrality (which reflects someone's degree of social integration in the community) and density (which reflects the proportion of active connections out of all possible connections) were measured via name generators ("Please list at most 10 people that you interact with regularly at *Community Name*"). We note that density and centrality were calculated after data collection based on the name generator question. Perceived community influence was measured via four different eco-domains (knowledge, eco-goods, awareness, and behaviors), and gauged via the following statements: the community has "increased my awareness of issues related to the environment", "provided me with the knowledge on how to reduce my impact on the planet," "led me to consume more environmentally friendly goods," and "caused me to behave in more environmentally friendly ways." Attachment to place was measured by asking participants to rate their agreement with the following statements: "In general, I feel at home in *Community Name*," "I am interested in knowing what goes on in *Community Name*," "Being a resident of *Community Name* is like living with a group of close friends," "I would be upset about moving from *Community Name*," "I consider *Community Name* to be close knit," "I frequently attend the events held within *Community Name*." (3) Seven items that capture other TH-related considerations (e.g., housing type, reasons for living tiny, explanation of how tiny house community has helped to reduce environmental impact, length of interest in tiny house living, time spent living at community).

[2] While the role of sustainability as an individual motivator to live in a tiny house has been studied more extensively (Alexander & Shearer, 2019; Boeckermann et al., 2019; Bruijn, 2020; Harris, 2018; Jebbink, 2019; Olsson, 2020; Saxton, 2019; Summers, 2021), many of these studies provide no or only limited insights into how environmental issues play out at the community level.

[3] Mangold (2021) also noted that not all communities provided the total number of respondents who received the survey which entails that the response rate is possibly higher. Mangold (2021) made a total of 3 attempts to reach community contacts to inquire about the number of people who were sent the survey in each community.

Reasons to go tiny were measured using an open-ended response format. (4) Nine items captured key *demographic characteristics* of the residents (e.g., age, gender, race, education level, household size, income, religion, employment status).

(5) Finally, five items captured *miscellaneous issues* (e.g., screener questions, follow-up questions etc.).

Data Analysis: The new analysis was conducted using five variables from the original dataset; centrality, community attachment, community influence, as well as two matrix variables. One matrix question measured eleven pro-environmental behaviors prior to living in community and the other matrix question measured the same behaviors at the time of data collection. To create a more nuanced understanding of community effects, twelve new *net behavior change* variables were created using data from prior and current frequencies of each item behavior. The resulting variables capture both total net behavioral change as well as net behavioral change with respect to certain activities (e.g., buying eco-products, reducing trash, using rainwater, using solar, making eco-donations, recycling, composting, growing food, sharing resources, reducing driving, and riding a bike). In addition, open-ended responses for reasons to live in a TH community were coded. This was done to better gauge the relative importance of environmental considerations in individual decision-making processes. To assess how each community affects residents across eco-domains, the community influence variable was split into four new influence variables focusing on knowledge, eco-goods, awareness, and behaviors, respectively. Using IBM SPSS 28.0, a range of univariate and bivariate statistics were run to see how these factors affect eco-views and eco-practices in each of the ten communities. Finally, community data (e.g., density, centrality, and residents surveyed/not surveyed) were imported into Gephi 0.9.2[4] for further analysis. Using residents' centrality and density scores, Gephi generated ten unique network plots that provide a snapshot of the internal "makeup" of each community. Larger nodes ("dots", "residents") have more connections to other nodes which suggest a higher centrality of the individual in the community. Smaller and "greyed-out" nodes, in contrast, highlight less-connected members of the community. The final infographic thus tries to visualize how community structure, internal social cohesion, and perceived community impact are potentially intertwined (see Figure 1).

3. Results

The findings of this study – taken together – suggest that tiny house communities can and do change residents' environmental views and eco-practices over time. This "greening effect", though real, varies with different community characteristics, and across specific eco-domains and eco-behaviors.

Basic Community Characteristics: The findings of the study underscore that certain community characteristics such as centrality, attachment, and density can shape domain-specific eco-practices – though the underlying processes are not always clear. Figure 1 shows that most TH communities are small, and, with the exception of community 8 tend to have low density scores (0.059 to 0.333). The infographic also underscores that the communities have influenced residents' views and behaviors – although this "greening effect" seems to be stronger in some communities (e.g., community 6) than in others (e.g., community 7). Table 1 further highlights that community density may not drive these perceptions ($r(63) = .067$, $p < .05$), nor does density seem to relate to community attachment ($r(63) = -.023$, $p < .05$). Centrality – in contrast – seems to tell a better story in how communities may influence residents' day-to-day lives. Residents tend to not only have comparatively high centrality scores (as captured by larger node sizes in Figure 1) but centrality scores (see Table 1) also correlate more strongly with perceived community influence ($r(63) = .339$, $p < .05$). This suggests that residents are generally well-connected, and that they are often quite aware of how their communities affect them. Centrality scores alone, however, only provide a limited picture of these processes. Community attachment scores add an additional – albeit indirect – indicator for the quality of these relationships. Capturing a resident's closeness to the place and its people, higher attachment scores may partially reflect a resident's willingness to adopt prevailing beliefs and practices – including those that focus on environmental issues. This line of reasoning is further strengthened by the moderate correlations (see Table 1) that exist between attachment and community influence ($r(63) = .461$, $p = < .05$), as well as centrality and attachment ($r(63) = .448$, $p = < .05$)[5].

[4] Gephi is a leading open-source software platform that allows researchers to visualize and analyze a wide variety of social network data.

[5] Taken together, these findings suggest that despite a lack of internal cohesion, many of these TH communities have relationship clusters that can "green" the lives of their residents.

Community Effects Across Broader Eco-Domains: Our findings further indicate that communities do influence residents across four broad eco-domains: awareness, knowledge, eco-friendly products as well as pro-environmental behaviors (see Table 2). While the "greening effect" can vary across communities and domains, the data shows that, on average, more than a third of the residents in each community credit their communities for these changes. The greatest perceived community influence seems to occur in the domain of eco-behaviors. On average, 60% of residents in each community felt that their behaviors were becoming "greener" because of their communities. In four communities this effect was even more pronounced with most residents attributing these changes to community processes (80%-100%).

There were only two communities in which influence was muted. In them, only 25%-33% of the residents reported community effects. In addition to "greening" behaviors, more than half of the individuals in each community reported an increase in awareness of environmental issues. While some documented lower levels (e.g., community 7: 25%), five communities saw widespread change in eco-awareness. In these communities, 56% to 80% of the residents reported that the community had affected them in this domain. Likewise, many residents felt that the community had helped them gain more knowledge on how to reduce their individual impact on the planet. On average, 44% of the individuals in each community reported this, with seven communities seeing lower (20%-44%) and three experiencing higher levels of change (50%-100%). Finally, the findings also seem to indicate that communities can – under the right circumstances – get residents to use eco-friendly goods more often (e.g., use products made from recycled or upcycled materials). On average, about half of the residents in each community reported a community effect in this domain. While all communities witnessed an effect, the perceived impact was perceived as greater in some (60%-100%). These findings further underscore a possible link between certain community processes and domain-specific eco-changes that may occur as a result of someone living in these places.

Community Effects on Specific Eco-Behaviors: In addition to these domain-specific phenomena, the analysis also suggests that certain eco-behaviors may be more malleable to community influence than others (see Figure 2). Given the variation within and across communities[6], teasing these interpersonal and community-driven dynamics apart is not easy. At one level, it seems much easier for communities (or relationship clusters in them) to get people to grow their own food, drive their cars less, engage in composting, and/or share their resources with others. In actual numbers that meant that nearly all (9 out of 10) TH communities experienced at least a 10% net increase in residents' likelihood of growing their own food. Six communities saw changes of 40% and three reported 50% net changes. Similarly, other eco-behaviors such as composting, driving less, and/or sharing resources also increased in frequency over time. Three of the ten communities experienced net changes in these areas of 40% or more. Other eco-behaviors, however, seemed virtually unaffected by communal living. Only one community, for example, reported changes in individual rainwater use. Other eco-behaviors such as making donations to environmental organizations, purchasing eco-products, or engaging in recycling saw an actual net decrease. One community saw the frequency of recycling decline by 60%. Five communities experienced a 10% decrease in residents' frequency of donating to environmental organizations, while two communities documented a 30% decrease in the purchase of environmentally friendly products. While the nature of the data does not allow us to further disentangle these findings, it seems reasonable to assume that eco-behaviors are subject to both the influence of personal relationships and the more structural characteristics of the community.

4. Discussion & Conclusion

TH communities seem to "green" the views and practices of their residents via two processes: interpersonal relationships, and existing community structures/processes (Daly, 2017; Marckmann et al., 2012)[7]. Research on eco-housing and ecovillage communities, for example, suggests that strong relationships among residents can increase the adoption and frequency of eco-behaviors (Daly, 2017; Marckmann et al., 2012; Meltzer, 2000). Friends and neighbors in these communities nurture the love for the environment (Marckmann et al., 2012) and put subtle pressures on others to live up to a greener lifestyle (Daly, 2017; Marckmann et al., 2012; Meltzer, 2000). Individuals who are embedded into more cohesive clusters of the community may also be the residents that are most receptive to these "pressures". It is likely, that these clusters create webs of subtle obligations. While the number of relationships matters less than their

[6] This intra-community variation may also be in part be a result of the small sample size, which allows for outliers to skew a community's average. Bigger samples for each community would have reduced intra-community variation as it would have created a more accurate average less influenced by outliers.

[7] There is potentially a third explanation. It could also be that certain TH communities – those that are seen as more sustainable from the outside – attract people that already have high pro-environmental attitudes and behaviors. Thus, it may be that the "greening effect" of these communities constitutes an exception rather than the norm. Future research will have to help disentangle these complexities.

quality, it seems that these ties can nudge residents to become more vested in their communities. The same processes obviously can have the exact opposite outcome with commitments to a greener lifestyle being relaxed and/or even discouraged (Kirby, 2003; Van Schyndel Kasper, 2008). Relationships matter. But changes in eco-views and eco-behaviors may also be due to existing community structures and/or processes. Communities with more systematic efforts to "green" everyday practices can produce more lasting changes than those without them (Tummers & MacGregor, 2019). Studies on cohousing communities, in particular, have shown that residents will grow their own food (Daly, 2017; Marckmann et al., 2012; Meltzer, 2000; Tummers & MacGregor, 2019), reduce water consumption (Tummers & MacGregor, 2019) and/or share resources (Marckmann et al., 2012) - as long as the necessary social and physical infrastructure is in place (Daly, 2017; Marckmann et al., 2012; Sanguinetti, 2014).

These "systems" (e.g., community gardens, community recycling programs, communal approaches to water and energy use) are effective because they weave behavioral change into the fabric of the community. Whether these communal processes can trump interpersonal processes, however, goes beyond the scope of this study. To deepen our understanding of these and other community processes, future research thus needs to more carefully differentiate between relationship-based and "true" community processes more carefully. Communities – as this study has shown – do green residents' views and practices. It just remains unclear how and under what precise circumstances ....

5. Bibliography

Alexander, S., & Shearer, H. (2019). The Search for Freedom, Sustainability, and Economic Security: Henry David Thoreau as Tiny House Pioneer. Ethical Perspectives, 26(4), 559–582. https://doi.org/10.2143/EP.26.4.3288450

Bartholomew, S. R., Santana, V., & Strimel, G. J. (2019). teaching engineering concepts through socially relevant contexts: serving the homeless with smart tiny homes. Technology & Engineering Teacher, 78(7), 24–27. https://ezproxy2.library.colostate.edu/login?url=https://search.ebscohost.com/login.aspx?direct=true&AuthType=cookie,ip,url,cpid&custid=s4640792&db=aph&AN=135580930&site=ehost-live

Boeckermann, L. M., Kaczynski, A. T., & King, S. B. (2019). Dreaming big and living small: examining motivations and satisfaction in tiny house living. Journal of Housing and the Built Environment, 34(1), 61–71. https://doi.org/10.1007/s10901-018-9616-3

Bruijn, E. de. (2020). The emergence of Tiny houses in the Netherlands.

Calhoun, K. H., Wilson, J. H., Chassman, S., & Sasser, G. (2022). Promoting Safety and Connection During COVID-19: Tiny Homes as an Innovative Response to Homelessness in the USA. Journal of Human Rights and Social Work, 7(3), 236–245. https://doi.org/10.1007/s41134-022-00217-0

Carras, M. (2019). Tiny house, big impact?': an investigation into the "rise" of the Tiny Home Lifestyle (THL) in the United States. University of St Andrews.

Carrizosa, P. (2021). Could tiny homes be the adorable, affordable and sustainable housing that our planet needs? |. TED. https://ideas.ted.com/impact-of-tiny-homes-on-the-environment-and-affordable-housing/

Daly, M. (2017). Quantifying the environmental impact of ecovillages and co-housing communities: a systematic literature review. Local Environment, 22(11), 1358–1377. https://doi.org/10.1080/13549839.2017.1348342

Evans, K. (2020). Tackling Homelessness with Tiny Houses: An Inventory of Tiny House Villages in the United States. The Professional Geographer, 72(3), 360–370. https://doi.org/10.1080/00330124.2020.1744170

Evans, K. (2022). An examination of perceptions and preferences for tiny house villages for the homeless in Missouri. International Journal of Housing Policy, 1–22.

Ford, J., & Gomez-Lanier, L. (2017). Are Tiny Homes Here to Stay? A Review of Literature on the Tiny House Movement. Family and Consumer Sciences Research Journal, 45(4), 394–405. https://doi.org/https://doi.org/10.1111/fcsr.12205

Harris, T. (2018). The tiny house movement: Challenging our consumer culture. Rowman & Littlefield.

Hutchinson, D. (2016). Struggling for spatial authenticity: An analysis of the tiny house movement. University of Colorado at Denver.

Jackson, A., Callea, B., Stampar, N., Sanders, A., De Los Rios, A., & Pierce, J. (2020). Exploring Tiny Homes as an Affordable Housing Strategy to Ameliorate Homelessness: A Case Study of the Dwellings in Tallahassee, FL. In International Journal of Environmental Research and Public Health (Vol. 17, Issue 2). https://doi.org/10.3390/ijerph17020661

Jebbink, M. (2019). Life in a shoebox: About people and their motivation to go tiny. A qualitative interview study on the intrinsic and extrinsic motivations to follow the tiny house lifestyle. http://essay.utwente.nl/78118/

Kang, J., Martinez, C. M. J., & Johnson, C. (2021). Minimalism as a sustainable lifestyle: Its behavioral representations and contributions to emotional well-being. Sustainable Production and Consumption, 27, 802–813. https://doi.org/10.1016/j.spc.2021.02.001

Kilman, C. (2016). Small house, big impact: the effect of tiny houses on community and environment. Undergraduate Journal of Humanistic Studies, 2(Winter 2016).

Kirby, A. (2003). Redefining social and environmental relations at the ecovillage at Ithaca: A case study. Journal of Environmental Psychology, 23(3), 323–332. https://doi.org/https://doi.org/10.1016/S0272-4944(03)00025-2

Mangold, S. (2021). Tiny House Communities: A Model for Sustainability. ProQuest Dissertations Publishing.

Mangold, S., & Zschau, T. (2019). In search of the "Good Life": The appeal of the tiny house lifestyle in the USA. Social Sciences, 8(1). https://doi.org/10.3390/socsci8010026

Marckmann, B., Gram-Hanssen, K., & Christensen, T. H. (2012). Sustainable Living and Co-Housing: Evidence from a Case Study of Eco-Villages. In Built Environment (Vol. 38, Issue 3, pp. 413–429). https://www.ingentaconnect.com/content/alex/benv/2012/00000038/00000003/art00007

Meltzer, G. (2000). Cohousing: Verifying the Importance of Community in the Application of Environmentalism. Journal of Architectural and Planning Research, 17(2), 110–132.

Mingoya, C. A. (2015). Building together: tiny house villages for the homeless: a comparative case study. Massachusetts Institute of Technology, Department of Urban Studies and Planning.

Mutter, A. (2013). Growing tiny houses: Motivations and opportunities for expansion through niche markets. IIIEE Master Thesis.

Olsson, M. (2020). Living Tiny : An exploratory study of the Swedish tiny house movement TT - Tiny houses i Sverige (swe). In TRITA-ABE-MBT NV - 2035: Vol. Independent. http://kth.diva-portal.org/smash/get/diva2:1424935/FULLTEXT01.pdf

R, E. (2019). From Luxury To Sustainability: Our Favorite Tiny House Communities – Tiny Home Lives. https://tinyhomelives.com/tiny-house-communities/

Roberts, T. (2018). What We Can Learn from Tiny House Communities. Rise. https://www.buildwithrise.com/stories/tiny-house-communities-in-north-america

Sanguinetti, A. (2014). Transformational practices in cohousing: Enhancing residents' connection to community and nature. Journal of Environmental Psychology, 40, 86–96. https://doi.org/https://doi.org/10.1016/j.jenvp.2014.05.003

Saxton, M. W. (2019). The ecological footprints of tiny home downsizers: An exploratory study. Virginia Tech.

Search Tiny House Villages. (2020). https://searchtinyhousevillages.com/villages/co-whispering-aspen-village/

Shearer, H., & Burton, P. (2018). Towards a Typology of Tiny Houses. Housing, Theory and Society, 36(3), 298–318. https://doi.org/10.1080/14036096.2018.1487879

Shearer, H., & Burton, P. (2021). Tiny houses: movement or moment? Housing Studies, 1–23. https://doi.org/10.1080/02673037.2021.1884203

Summers, N. (2021). The socioeconomic concentration of intensive production interest: Lessons from the tiny home community. Journal of Consumer Culture, 1469540520982360. https://doi.org/10.1177/1469540520982360

Thiel, H. (2020). The Benefits Of Tiny Home Living - Everything You Should Know. Green Living. https://greenlivingmag.com/benefits-of-tiny-home-living/

Tummers, L., & MacGregor, S. (2019). Beyond wishful thinking: a FPE perspective on commoning, care, and the promise of co-housing. International Journal of the Commons, 13(1).

Turner, C. (2016). It takes a village: Designating tiny house villages as transitional housing campgrounds. U. Mich. JL Reform, 50, 931.

Van Schyndel Kasper, D. (2008). Redefining Community in the Ecovillage. Human Ecology Review, 15(1), 12–24. http://www.jstor.org/stable/24707480

Willoughby, C., Mangold, S., & Zschau, T. (2020). Small Houses, Big Community: Tiny Housers' Desire for More Cohesive and Collaborative Communities. Social Sciences, 9(2). https://doi.org/10.3390/socsci9020016

Zhang, D., Gong, M., Zhang, S., & Zhu, X. (2022). A review of tiny houses in North America: Market demand. Sustain. Struct, 2, 12.

6. Figures and Tables

Table 1: Correlation Matrix for Select Individual and Community Factors

	Density	Centrality	Attachment	Attitude Change	Behavior Change	Community Influence
Density		0.278*	-0.023	-0.142	0.031	0.067
Centrality	0.278*		0.448*	-0.024	0.344*	0.339*
Attachment	-0.023	0.448*		0.066	0.220	0.461*
Attitudes Change	0.260*	0.168	0.030		0.399*	0.044
Behaviors Change	-0.029	-0.145	0.034	0.399*		0.366*
Community Influence	0.067	0.339*	0.461*	0.044	0.366*	

Notes: *significant at the .05 level

Table 2: Community Characteristics, Community Influence, and Select Influence Domains

		Density	Attachment		Centrality		Influence		Influence Domains[1]				
#*	N	Value	Mean	SE	Mean	SE	Mean	SE	Knowledge	Eco-Goods	Awareness	Behaviors	All
1	9	0.33	16.3	1.4	0.6	0.1	10.3	1.40	44.4%	44.4%	44.4%	33.3%	37.5%
2	10	0.17	20.6	1.0	0.6	0.1	9.7	1.27	40.0%	40.0%	40.0%	50.0%	30.0%
3	5	0.20	19.4	1.8	0.8	0.1	9.4	0.75	20.0%	20.0%	40.0%	40.0%	20.0%
4	5	0.33	22.0	0.5	0.6	0.2	11.8	1.20	80.0%	60.0%	80.0%	80.0%	60.0%
5	3	0.21	21.0	2.1	0.8	0.2	10.7	1.20	33.3%	66.6%	66.7%	100%	33.3%
6	3	0.15	20.7	1.7	0.9	0.1	14.7	1.33	100%	100%	66.%	100%	100%
7	4	0.12	16.8	3.4	0.7	0.2	6.0	2.80	25.0%	25.0%	25.0%	25.0%	25.0%
8	6	0.62	18.7	1.3	0.9	0.0	11.3	1.41	33.4%	66.7%	66.7%	83.3%	66.7%
9	4	0.10	17.8	1.3	0.4	0.2	11.0	1.58	50.0%	75.0%	50.0%	50.0%	50.0%
10	16	0.06	17.8	0.7	0.6	0.1	10.5	0.59	42.8%	50.1%	56.3%	68.8%	25.0%
All	65	0.21	18.8	1.3	0.7	0.1	10.39	1.2	44.4%	50.8%	52.3%	60.0%	39.0%

Notes: *… community number; [1]…*Knowledge* is based on survey item "my community provided me with the knowledge on how to reduce my impact on the planet"; *Eco-Goods* is based on survey item "my community led me to consume more environmentally friendly goods"; *Awareness* is based on survey item "my community increased my awareness of issues related to the environment"; *Behaviors* is based on survey item "my community caused me to behave in more environmentally friendly ways"; percentages represent all residents that answered "strongly agree" or "agree".

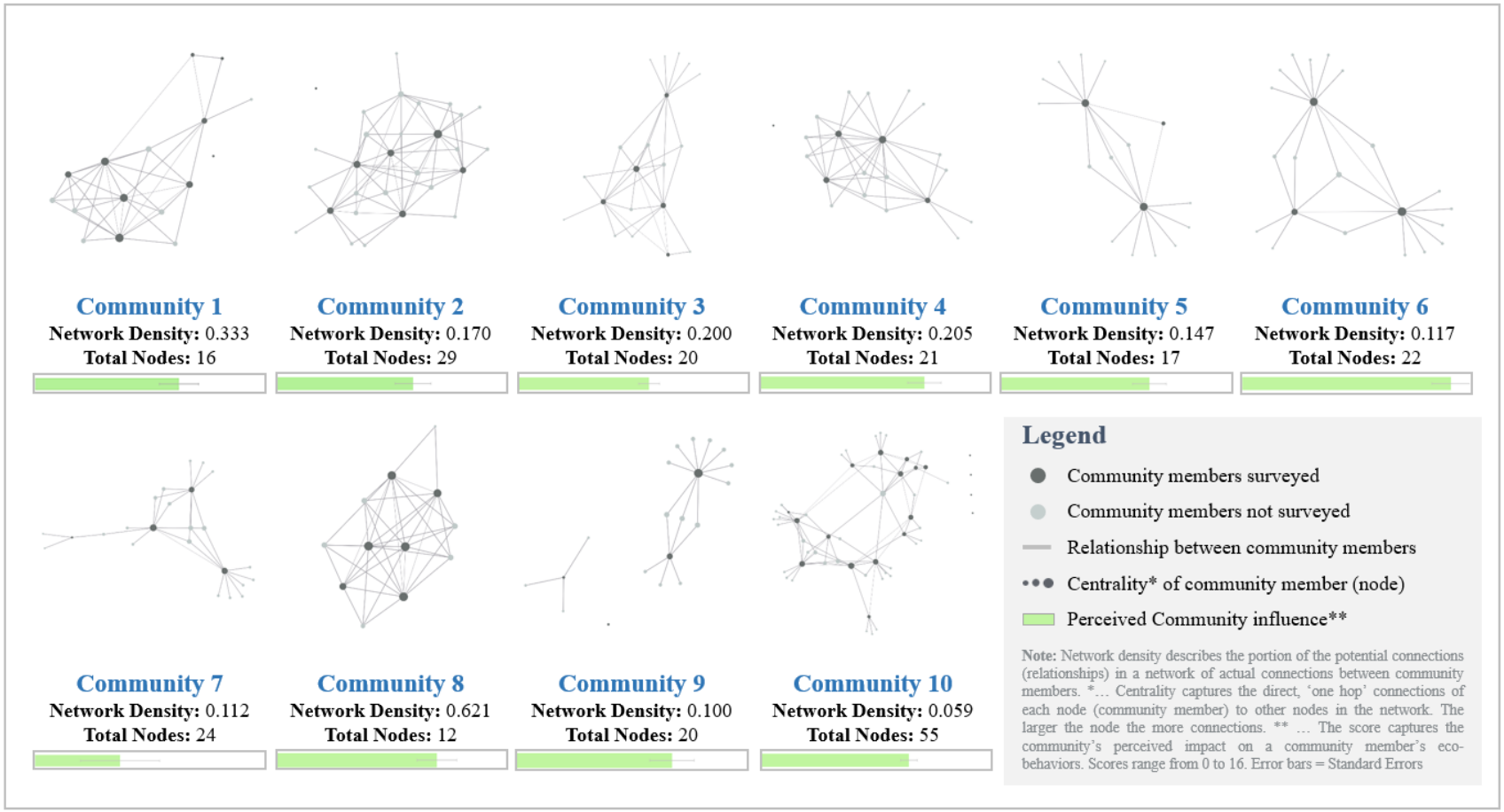

Figure 1: Community Structure and Select Community Characteristics of Ten US-Based TH Communities

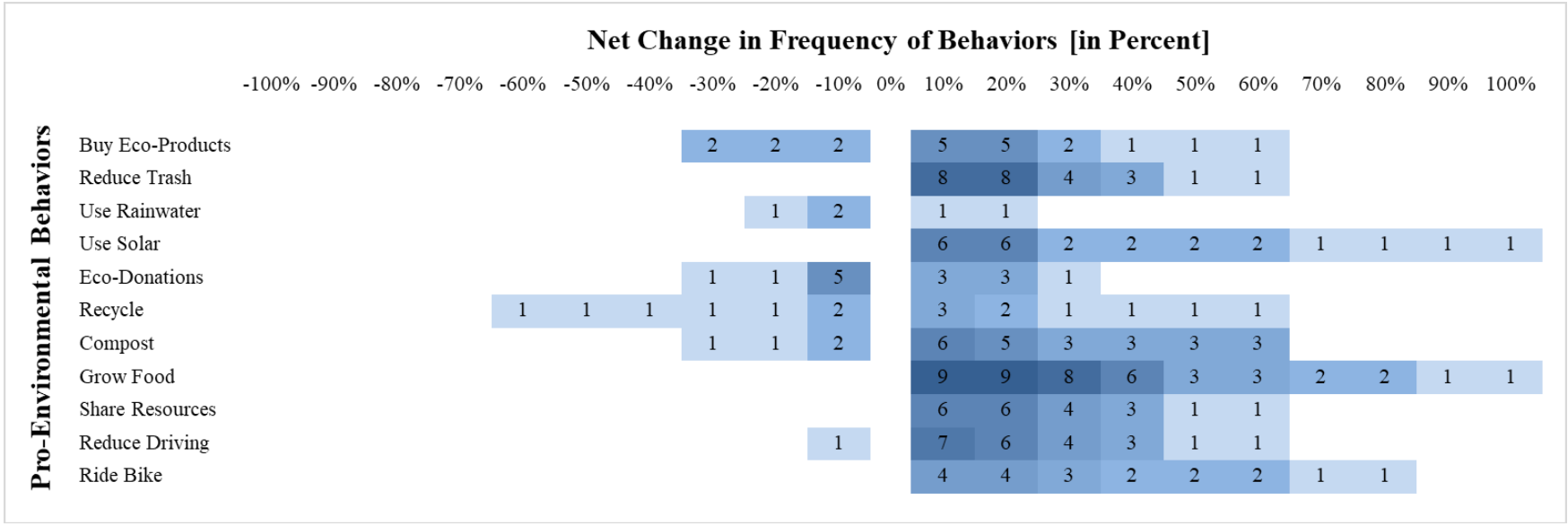

Figure 2: Net Change in Pro-Environmental Behaviors within TH Communities

Notes: Values in shaded boxes represent the number of communities where net behavioral change occurred. Shaded areas themselves reflect percentage of residents in community that exhibited specific behavior change. Negative values indicate a reduction in the frequency of behavior. Important: a community at 10% will be included at 20% and so on if a community exhibits higher percentages.