

# Are Tiny Homes Here to Stay? A Review of Literature on the Tiny House Movement

Jasmine Ford and Lilia Gomez-Lanier

*University of Georgia*

*In the last few years, tiny houses have been promoted as a new, eco-friendly housing solution to combat the current waste of the housing industry. This article provides a review of the current literature regarding tiny houses and an examination of tiny house communities through the lens of the three-pronged approach to sustainability. This approach encompasses environmental, social, and economic considerations to provide a holistic examination of the sustainability of the tiny house movement.*

**Keywords:** *tiny homes; sustainability*

The “tiny house movement” has been gaining popularity in the public consciousness in recent years. The movement has been informed by a general interest in “minimizing, de-cluttering, and downsizing” that has its origins in the 19th century romanticism of Thoreau and Emerson (Anson, 2014; Morrison, 2014). The movement’s development has also been influenced by the 20th century minimalist credo that “less is more.” The main assumption of the tiny house movement is that homeowners can reduce the environmental impact and increase affordability by reducing their spatial footprint. Also, proponents of the movement have been optimistic about the potential for tiny houses to address a number of housing issues. In fact, tiny houses have been proposed as a solution for mobile housing for busy travelers (Shahani, 2015), temporary housing and guest homes (Hunter, 2015; Robinson, 2016), housing for the homeless (Johnson, 2016; Priesnitz, 2014), and as a solution for housing in urban areas that host large populations in limited space (Maghribi, Wakatsuki, & Defterio, 2015; Priesnitz, 2014).

Due to the recent emergence of the tiny house movement, there have been relatively few academic discussions surrounding tiny houses and their alleged feasibility as a long-term sustainable housing solution (Anson, 2014). Tiny houses have been widely covered in other media including periodical articles,

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**Author’s Note:** Jasmine Ford, MS, is a Masters in Textiles, Merchandising, and Interiors in the department of Textile, Merchandising and Interiors, College of Family and Consumer Sciences at University of Georgia. Lilia Gomez-Lanier, Ed.D. is an Assistant Professor in the department of Textiles, Merchandising and Interiors, College of Family and Consumer Sciences at University of Georgia. Please address correspondence to Lilia Gomez-Lanier, Department of Textiles, Merchandising and Interiors, College of Family and Consumer Sciences, University of Georgia, D.W. Brooks Drive, Room 213, Barrow Hall, Athens, GA 30602; e-mail: lglanier@uga.edu.

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narratives, blogs, and television shows, but examination of the movement from an academic perspective is limited. This article is a review of literature that examines the potential of the tiny house movement through the lens of the “triple bottom line” approach of sustainability which encompasses environmental, social, and economic considerations.

## SUSTAINABILITY AND INTERIOR DESIGN

As Susan Winchip points out in her textbook *Sustainable Design for Interior Environments*, many “erroneously believe that sustainability is a new name for green or environmental design” (Winchip, 2011, p. 4). Instead of adopting a narrow definition that only addresses the environmental impact of design, Winchip advocates a holistic definition that encompasses environmental, social, and economic considerations.

The idea of expanding the concept of sustainability beyond environmental concerns was first introduced in a publication entitled *Our Common World* during the 1987 United Nations World Commission on Environment and Development. The commission put forth a definition of sustainability commonly known as the Brundtland Report. The Brundtland Report noted that a truly sustainable project must “[meet] present needs without compromising the ability of future generations to meet their own needs.... Development involves a progressive transformation of economy and society.... Even the narrow notion of physical sustainability implies a concern for social equity between generations...” (United Nations World Commission on Environmental Development, 1987). Thus, the premise is clear that sustainability is not just a discrete environmental practice that serves short-term goals. Instead, sustainability is something that paves the way for positive change over the long-term and that allows future generations to live in a physically healthy environment that also promotes social and economic equity.

This concept of sustainability and sustainable development can be applied across multiple disciplines including the design world. Eastern Michigan Interior Design professor, Dr. Louise Jones—in *Environmentally Responsible Design*—states that sustainable development in design “implies a macro perspective, with enhancement of the global environment and protection of the world’s ecosystems as the underpinning for design decisions” (Jones, 2008, p. xi). Similar to Winchip (2011), Jones (2008) makes the distinction that the “micro”-perspective of green design is only one aspect of sustainable practice. To be fully sustainable, a home must conserve its resources, function as an environmentally healthful space for its inhabitants, and remain ecologically conscious of its surrounding physical environment while accommodating the surrounding social and economic environment. This broad perspective is also referred to as “the triple bottom line, specifically the relationships between the environment and the economy, with a focus on social equity” (Memari et al., 2014, p. 9).

### Environmental Considerations

Recent U.S. Environmental Protection Agency (EPA) reports cite health concerns over indoor pollutants. According to Lee, Allen, and Kim (2013, p. 1), indoor pollutants “may be two to five times higher than outdoor levels.” Furthermore,

the origins of these indoor pollutants can be linked to “harmful gases or particles emitted from building materials, that is, flooring, paints and coatings, adhesives and sealants, wall coverings, and wood products” (Lee et al., 2013, p. 1). This is an example of the need for interior designers to heighten their awareness and participation in matters relating to residential sustainability. Interior designers are responsible for selecting materials and finishes (the “paints and coatings, adhesives and sealants, [and] wall coverings” referred to in Lee’s study), and they have a direct influence on which toxins may or may not ultimately be introduced into their spaces. Volatile organic compounds (VOCs) are a major concern for many paints, varnishes, and finishes, and are most likely the “harmful gases or particles” to which Lee refers. The term VOC refers to a wide variety of carbon-containing chemicals (hence the “organic”) that easily evaporate or sublimate into their surrounding environments (hence the “volatile”), even at room temperature and normal atmospheric pressure (Costelloe-Kuehn, 2016, p. 1). VOCs can pose a major health hazard, and they can lead to nausea, dizziness, and headaches; irritation of the eyes, nose, and throat; and some VOCs, most notably formaldehyde, have been found to be carcinogenic.

In addition to the indoor pollutants referred to by Lee et al. (2013), chemicals such as chlorofluorocarbons (CFCs)—known to deplete the ozone layer—are also emitted by appliances such as refrigerators and air conditioners. Not only are CFCs a concern with these appliances, excessive and unnecessary energy consumption by air-conditioning units and other appliances can also lead to negative environmental impact and deplete resources. According to a 2005 report released by Natural Resources Canada, an air conditioner can consume the same amount of energy in one season as a standard refrigerator does in a year (Friedman, 2007, p. 2). Combine that with the general increase in household consumption of energy for other electrical appliances, water, and gas that is used for heating (and petroleum gas used in suburban cars), and there is a large area for improvement that interior designers are certainly poised to tackle through ecologically responsible design decisions. For example, the decision to specify energy-efficient appliances certified by a third-party verifier such as Energy Star, or designing fenestration (windows and their placement) to minimize the amount of heat trapped from sunlight are both within the purview of the interior designer.

*Economic Considerations.* Naturally, one can assume that a smaller space costs less to build. A by-the-numbers look at a few of the spaces as shown in Table 1 confirms that tiny homes can reduce a homeowner’s overall expenditures significantly. The last row in Table 1 represents the Tumbleweed Tiny House Company, based in Colorado, which was the first commercial producer of tiny homes.

Outright costs are lower, as are the cost of heating, cooling, and energy. For example, Mary Murphy states that her tiny home cost only \$15 to heat during its first Vermont winter—the cost of a space heater (Murphy, 2014, p. 56).

### **Social Considerations**

When it comes to social sustainability, one must consider community context. How does a home work with other homes in its neighborhood, and how does a

**TABLE 1: Cost Comparison of Tiny Homes**

<i>Home</i>	<i>Location</i>	<i>Square Feet</i>	<i>Cost to Build</i>
A tiny house (April Anson)	Oregon	120 sq ft	\$20,000
Mary Murphy	Vermont	82 sq ft	\$5,000
The Big Tiny (Dee Williams)	Oregon	84 sq ft	\$10,000
Tumbleweed Tiny House Company	Colorado	117–131 sq ft	\$57,000–\$61,000

Note: The average cost of a U.S. home in 2014 was \$306,900 (U.S. Census Bureau Survey of Construction, 2014).

neighborhood relate to the surrounding community? What kind of amenities are within convenient distance, and do these amenities adequately serve the neighborhoods within which they are located? The answers to these questions are heavily dependent on the specific make-up of each community.

Because of their small size, relatively low cost of construction and maintenance, and (in many cases) portability, tiny houses have been proposed as a solution for an array of housing problems in a number of different environments. As diverse as the environments they find themselves in and the clientele they can serve, tiny houses are also esthetically diverse. Tokyo resident Minoru Ota's concrete-clad cubic "micro-house" fits seamlessly into the urban landscape of Tokyo (Maghribi et al., 2015), while Mary Murphy's rustic wooden home on wheels complements the rural Vermont landscape she calls home (Murphy, 2014).

Tiny houses can provide temporary housing—as in the case of Harvard School of Design's experimental tiny houses for rent as guesthouses for travelers visiting the Boston area (Hunter, 2015; Robinson, 2016). Tiny houses could be transitional housing for those wanting to save money for a larger property, or mobile studios for frequent business travelers (Shahani, 2015). Tiny houses could be permanent housing for some wanting to shed the cost of living in and maintaining a traditional larger home (Williams, 2014). In rural environments, tiny houses can provide shelter and mobility for those who wish to pursue an alternative lifestyle and live "off-the-grid" (Murphy, 2014).

In urban environments, tiny houses can house dense populations in limited space. For example, in areas like Tokyo, Japan—which is home to approximately 6,000 people per square kilometer—"micro-houses" have become more common over the past 20 years (Maghribi et al., 2015). With the price of land surpassing \$1,000 per square foot as of 2015, residents wishing to own their own homes must often build on extremely small lots. Some have built on footprints as small as 26 or 30 m<sup>2</sup>, which are about the size of two parking spaces in the United States (Maghribi et al., 2015). Japanese architect Denso Sugiura notes the increase in demand for micro-houses has coincided with the growing number of working families, who wish to move their households closer to city offices. Sugiura states that he has designed 135 micro-houses in the past 20 years (Maghribi et al., 2015).

Although micro-homes have taken root in Tokyo over the past couple of decades, the consideration of tiny homes as a housing solution in urban areas of the United States is a much more recent development. In 2012, an experimental tiny house village, called Boneyard Studios, was built in Washington, D.C., to demonstrate the potential for tiny homes on wheels to provide a creative solution for urban infill (Priesnitz, 2014, p. 14). Another use for the urban tiny

house is a solution to local homelessness. In January of 2016, Seattle opened the doors to its first tiny house village for the homeless. The 14 houses in this village each take up an 8-foot-by-12-foot footprint, and cost \$2,200 each (Johnson, 2016). Similar villages in Austin, Texas; Olympia, Washington; and Eugene, Oregon, were all funded by the efforts of local nonprofits or churches (Priesnitz, 2014). The case studies in the following section more closely examine some of these examples.

## CASE STUDIES OF TINY HOUSES

### *Kyosho jutaku: Micro-Homes in Tokyo, Japan*

*Kyosho jutaku* is the Japanese term for “micro-home.” The Japanese are no strangers to living small. For decades, the Japanese have packed their dense population into small living quarters. In the 1970s, the then head of the European Commission, Sir Roy Denman, famously (or infamously) remarked that Japan was “a nation of workaholics who live in what Westerners regard as little more than rabbit hutches” (Buchan, 2006, p. 1). Because they have been building tiny houses for so long, the Japanese are advanced in their space-saving techniques and the ability to artfully craft tiny homes that serve the needs of their inhabitants.

Japanese architects have had to be especially innovative to design micro-houses, some of which are constructed on plots of land the size of a single parking space (Craft, 2010; Lah, 2010). These tiny houses are far from an irregular oddity, they have become the “new normal” according to professionals. Tokyo-based architect Junichi Sugiyama states that, as of 2010, micro-homes constitute about 70% of his architectural firm’s business (Lah, 2010). To successfully construct a home in such tight quarters, architects draw from a supply of visual tricks, space-saving techniques, and creative storage solutions. Multifunctional spaces are a key component to any micro-house; kitchens can double as dining areas, or a bedroom can also be a recreational space (Maghribi et al., 2015). Eliminating interior walls and hallways visually opens spaces to multiple uses as do innovative features such as furniture that can fold into walls (Craft, 2010). Incorporating as much natural daylight as possible also contributes to making a small space feel more open. Examples range from south-facing, large windows to create the illusion of space (Lah, 2010) to windows in a variety of shapes and sizes scattered across a wall or concealed near the base (Craft, 2010).

With fiber-reinforced plastic, precast and Ferro concrete, glass cubes, and thin steel membranes, the micro-homes of Japan are able to take on a variety of creative shapes to match their unusual interiors. Transparent furniture and smaller-sized appliances conserve needed space and hidden cabinets, and the nooks and crannies formed by small staircases become storage solutions (Lah, 2010). Because Japan has had a decades-long history of tiny living, the Japanese have had ample time to discover creative solutions to the design conundrums faced by building in such limited space. As the United States begins to embrace the idea of living tiny, there may be lessons to be learned from the innovative use of space planning, materials, and construction encountered in Japan.

### **Boneyard Studios Village: Washington, D.C**

Boneyard Studios, founded by Lee Pera, Brian Levy, and Jay Austin, began as a collection of four tiny houses built upon a small undeveloped alley lot in northeastern Washington, D.C. The lot which measures only one-eleventh of an acre was purchased by Levy in 2012 to introduce Washington, D.C., residents to the phenomenon of the tiny home as “an experiment in simplicity, and sustainability, and creative urban infill” (Boneyard Studios, 2016). With its emphasis on community, cooperation, and collaboration, Boneyard Studios demonstrates the importance of social sustainability in the tiny house movement. Although each of the houses measures less than 220 square feet, each house was built as a collaborative effort. As a self-proclaimed “tiny house community” (Boneyard Studios, 2016), the village also features communal amenities such as an organic garden—which includes 16 fruit trees, ten 4-by-8 plots for vegetables as well as various herbs and flowers—along with a 250-gallon cistern to irrigate the garden (Laylin, 2013).

Boneyard Studios’ community-mindedness is highlighted within its mission statement which states that the goals of the village include “supporting other tiny home builders” and “modeling what a tiny house could look like” to the larger community (Boneyard Studios, 2016). Outreach efforts include an educational campaign of seminars on tiny house building and open houses to demonstrate the ability of tiny house communities to address the need for sustainable, affordable urban housing. Founder Lee Pera stated, “A lot of folks have been talking about tiny house communities, but most tiny houses are in someone’s backyard or in a rural area” (Cater, 2015). Lee said, “I really wanted to see what we could do creatively in D.C. with urban infill, and just another form of affordable housing” (Cater, 2015). Also, to the village’s advantage is its close proximity to public transit and local retail establishments. Each of these is an important aspect of socially sustaining the community and its inhabitants.

Each of the original Boneyard Homes is unique, highlighting the versatility of the tiny house and the ability to shape each house to fit its owner’s preferences while still effectively supporting the goals of sustainable living. Two of the houses feature rainwater collection systems and two houses utilize solar power (Laylin, 2013). Esthetically, the tiny houses range from the rustic cedar-sided Pera House to the cubic modern look of Brian Levy’s Minim House. The latter tiny house won the 2013 Merit Award from the Washington, D.C., chapter of the American Institute of Architects, as well as the Washington Award of Excellence from the same organization in 2015 (Goldchain, 2015). The houses range from 140 to 210 square feet in size (Laylin, 2013).

Zoning laws in Washington, D.C., state that a structure must be a minimum of 400 feet in order to be habitable. Because of this law, the homes in Boneyard Studios are not suited for full-time living. The lot is “nonbuildable” because the surrounding alleyways are less than 30 feet wide (which prevents adequate access by emergency vehicles), so the homes are all on wheels and they are built and towed in on trailers. Part of Boneyard Studio’s outreach involves advocating changing building and zoning codes. Until the laws change, the homes are part-time residences to model the potential of a full-time tiny house village. Over-reliance on community resources, rather than building each house to be completely self-sufficient on its own, has proven to be a disadvantage to the

Boneyard Studio. As of 2015, disputes over ownership of the land, finances, and use of community resources have fractured the original founding group.

#### **East Union Homeless Village: Seattle, Washington**

In 2015, more than 45 homeless people died on the streets of Seattle, prompting Mayor Ed Murray to declare a civil state of emergency, whereupon he pledged \$5.3 million to combat the issue (Cohen, 2015). Of the pledged funds, \$2.6 million was used to move the homeless into housing (Final Executive Action Plan, 2015, as cited in Cohen, 2015). Along with public funding, many private organizations made efforts to help alleviate the city's growing homelessness. In January 2016, Seattle opened the doors to its first tiny house village for the homeless. The 15-house village located downtown is a joint project of Seattle's Low Income Housing Institute and Nickelsville—a network dedicated to provide eco-friendly housing to Seattle's homeless (Johnson, 2016).

Each house costs about \$2,200 to build; each house is insulated and has electricity with oil heat registers during winter and fans during the summer (Capitol Hill Seattle, 2016). Because the lot for these tiny houses previously contained a single-family residence, the prior utility services were used for the tiny house village (Johnson, 2016). Each house can fit a family of three with the community sharing amenities such as a kitchen tent, showers, and a bathroom pavilion (Capitol Hill Seattle, 2016). Residents pay \$90 monthly to cover the utilities (Johnson, 2016). With rules and a contract in place for all residents, East Union Village is less likely to experience the conflicts that plagued the Boneyard Studios over fair usage of community resources. In addition, the transitional nature of the housing allows countless people to benefit from this housing, even when the initial tenants have no more use for them. This enables the community to embody the principles of both environmental and social sustainability.

### **LEGAL BARRIERS**

As interest in the tiny house movement grows, a closer look at what tiny living entails is required. Anyone interested in building their own tiny house has quite a few concerns, both practically and philosophically. The greatest barrier to the proliferation of tiny houses is adherence to building codes and local zoning ordinances (Anson, 2014; Murphy, 2014; Perry, 2015; Priesnitz, 2014; Williams, 2014). Tiny homes occupy a gray area between a trailer/mobile home/recreational vehicle and a house. For the most part, tiny houses do not fit neatly within any existing legal category. If viewed strictly as a house, they often violate building codes regarding size, both in terms of overall size (many areas designate a minimum square footage for a space to be considered habitable). Furthermore, certain "green" features often employed by tiny house owners (for example, graywater or compostable toilets) may not be permissible. When viewed as a mobile home, many regulations restrict where homes can be parked legally—and mobile home communities (trailer parks) and recreational vehicle communities do not always allow tiny houses (Anson, 2014).

Mary Murphy, who built a tiny home on wheels in Central Vermont, acknowledges the legal difficulties of trying to abide by building codes whose requirements of "broad hallways, wide doorways, and a host of other

details...make it difficult to design a small space that works well" (Murphy, 2014, p. 54). She suggests that putting one's tiny house on wheels is not only a way to achieve the convenience of mobility but it is also a way to exploit the "legal loophole" that exists around tiny home construction (Murphy, 2014, p. 54). Building her tiny home atop a recreational vehicle trailer's frame allowed her home to fall under recreational vehicle laws. This eliminated the need to abide by a minimum habitable space requirement. It allowed her to choose which systems to include in her home according to her individual needs, rather than "wastefully installing conventional systems just to meet building codes" (Murphy, 2014, p. 54). Building systems that could go unused ultimately waste resources and cost her more in utility bills and upkeep. She also noted that trailers are not subject to property taxes, which further lightens her financial burden (Murphy, 2014, p. 54). However, the advantages of a mobile tiny house could be offset by the difficulties imposed on them by zoning ordinances which regulate where tiny homes can legally be parked.

Even in areas reputed to be more lax in zoning regulations such as in the West and Pacific Northwest (where tiny houses are more common than in the South), zoning ordinances can be less maneuverable than expected. Dee Williams, who built her tiny house in Oregon, ran into problems with zoning through all phases from construction to residence. When planning the dimensions of her tiny house on wheels, she had to abide by the safety requirements of the Department of Motor Vehicles in order to ensure that her house could travel the roads without taking up more than a single traffic lane or being clipped by highway overpasses.

The regulations ultimately led to Williams' house not to exceed 13.5 feet in height and 8.5 in width (Williams, 2014, p. 96). Williams ran into her first major setback when her neighbor, a building contractor, informed her that the city of Portland would not allow her to keep her trailer on the street (Williams, 2014, p. 124). As it was too large to fit in her driveway, the trailer had to be parked in a friend's driveway to construct the home on the trailer, while storing construction materials in her friend's garage. Once the home was completed, she moved it to Olympia, Washington, to park in the backyard of another set of friends.

After an article about her tiny house ran in the local newspaper, townspeople began to complain that Williams and her tiny house were "squatting" in town, "undermining the local economy" by unfairly taking advantage of the public amenities (such as the public library) while not paying property taxes (Williams, 2014, p. 251). After an inspection, the city considered William's house as a recreation travel trailer, making it illegal to reside in it full time (Williams, 2014, p. 255). Her only recourse was to exploit a legal loophole in which she was able to receive a special caregivers' dispensation. By registering as an official caregiver for her friends' ailing great-aunt (who also lived on the property), she was able to legally keep her recreational vehicle on the property (Williams, 2014, p. 257).

As tiny houses grow in popularity, a few locations have begun to take legal measures to recognize them as their own form of housing, as opposed to trying to fit them into existing regulations. In January 2016, Fresno, California, became "the first city in the nation to write into its development code authorization for 'tiny homes'" (Mayor Ashley Swearingen, as cited in Khokha, 2016). The law allows any tiny house on wheels to be legally parked on a property as a permanent dwelling. The alternative would have been applying for recreational

vehicle or travel trailer legislation (which are legally only for temporary residence, and have restrictions on where and for how long they can be parked). Although this was a victory for tiny house enthusiasts, Fresno is (as of the time of this study) the first and only area that has changed its laws regarding the zoning of tiny houses.

### CRITICISM OF THE TINY HOUSE MOVEMENT

One of the philosophical tenets of the tiny house movement is the departure from the values of conventional society such as excessive consumerism and materialism. By living small, a person must keep only what is necessary to live. A tiny house is a deterrent to acquiring more stuff that will just take up more space. However, as tiny houses gain more national recognition, they have become a part of popular culture feeding into the consumerism trends they were supposed to deviate from. Anson (2014, p. 292) stated, "Popular media is undeniably bound to the commoditization of environmental sustainability in a market that continues to shelter economic and class privilege." This brought attention to a glaring discrepancy between the theory and practice of the movement.

Tiny house shows have become a fixture of cable television with the HGTV network alone showing three tiny house-related shows—*Tiny House Hunters*, *Tiny House Builders*, and *Tiny House, Big Living*. The television cable giant is expected to add a fourth show called *Tiny Luxury*. This proposed additional show advertises itself as following the commissioned homes built by the show's hosts, who own "the country's premier, high-end tiny home building company" ("*Tiny Luxury*," 2016). These shows market the tiny house movement as the new trend in consumerism. Using words such as "premier, high-end, and luxury" automatically connotes a diametrically opposed construction between privilege/wealth and poverty—which feeds the consumerist narrative of the haves versus the have-nots (and the desire to belong to the former), rather than opposing it.

Living sustainability involves adopting long-term practices rather than focusing on the needs of the moment. However, many tiny homeowners do not live in their tiny houses permanently. Instead, they adopt the lifestyle as a temporary arrangement (Anson, 2014, p. 294). Popular impermanent uses for a tiny house include using one as temporary housing while the inhabitants save for a traditional home, as a vacation or recreational home, or even as a rental home to generate extra income. None of these involve adopting a long-term change in lifestyle. These uses turn the tiny home into an extra material convenience rather than a sincere consequence of a simplified lifestyle. When used as a second property (a vacation home or income property), the houses become "yet another form of accumulation" undermining the philosophical foundation upon which the movement was formed in the first place (Anson, 2014, p. 294).

Although tiny houses have been proposed as the solution to a wide array of housing issues to suit different populations, "questions of access and private property rights emerge as controlling factors in the ability to join the movement," which also undermine the tiny house's claim as the most sustainable housing solution available today (Anson, 2014, p. 297). These include:

- **The Expense to Build.** Although tiny homes cost less to build, homeowners need to have the capital to build them up-front. With tiny homes seen neither as a home, dwelling unit, or trailer in many jurisdictions, construction loans to build them are hard to obtain. Although building a home for less than \$10,000 seems inexpensive, it becomes expensive when one needs all \$10,000 outright (Anson, 2014, p. 293). Mary Murphy and Dee Williams had easy access to second-hand and salvaged materials to build their homes which helped them decrease their construction costs even further. However, poverty-stricken people may not have ready access to second-hand or salvageable materials depending on where they live and the vehicles they have available to collect and transport goods. Therefore, tiny houses may not be as accessible to poor populations as may be initially assumed.

- **Living Expenses.** Although heating and cooling costs decrease with a limited space, so too does space for appliances and storage. Often, tiny homes contain either limited or no food storage, so residents need to make more trips to the grocery store, or spend money and gasoline by going out to eat more often. Tiny homeowners may find themselves relying on others for access to bathing facilities and stores to purchase items. In a situation where a person has strongly established social networks or ready access to public amenities, this may not be a hurdle. However, disadvantaged populations may be unable to manage a lifestyle in which they need to travel frequently to eat or shower.

- **Lack of Privacy.** Because tiny houses are so small, lack of privacy becomes a concern for those who do not live alone. For this reason, Mary Murphy admitted that tiny homes may not be a suitable living arrangement for families (Murphy, 2014, p. 55). Fuyuhito Moriya, a 39-year-old unmarried man, lived with his mother in a home built on a 30-m<sup>2</sup> lot in Tokyo (Lah, 2010). After living in the home for 6 months, he cited privacy as his biggest challenge with the space. He said, privacy has proven a challenge since he and his mother cannot exactly escape each other in their super small house (Lah, 2010).

## CONCLUSIONS AND FUTURE STUDY

As public environmental awareness grows, many industries have been revising their practices to demonstrate a stronger commitment to responsible environmental stewardship. The residential industry is the third largest energy-consuming industry, and it is in a prime position to consider adopting alternative practices (Friedman, 2007, p. 2). Hence, the tiny house has been brought forward by its proponents as a solution to environmental wastefulness. The original intent of the tiny house movement was to present an alternative to man's unnecessarily excessive consumption and destruction of the environment, as well as to introduce a more affordable path to home ownership.

Throughout the world, and more recently in a few areas of the United States, tiny houses are solving a number of housing crisis issues. These issues usually stem from either lack of urban space or to provide more affordable housing in areas where real estate is expensive. Yet, there are many legal and social barriers to wide-scale acceptance of tiny houses as a mainstream housing solution within the United States. The message of environmental sustainability risks is being overshadowed by marketing gimmicks and glamorized portrayals in popular

media. Although the tiny lifestyle is not a suitable fit for everyone, it shows promise within certain contexts, and among certain populations. As more cities make allowances in their zoning ordinances and building codes, the future of the tiny house and its best uses will become clearer.

It seems that tiny houses have the most long-term promise when used as temporary housing, whether that is transitional housing for the homeless, guest homes, or an alternative to hotel accommodations for travelers. As tiny houses continue to grow in popularity, more opportunities to study the movement will present themselves. Future areas of study could address the following questions.

- Postoccupancy evaluations of long-term tiny homeowners, to determine the long-term satisfaction of people who adopt tiny houses as part of a permanent lifestyle change.
- An examination of tiny houses used as permanent residences versus tiny houses used as commercial enterprises (rented guest homes, etc.), to determine how tiny living satisfies the needs of audiences with different motivations and desires.
- A feasibility study of a specific location that has expressed interest in adopting tiny houses to determine what social, economic, or environmental factors could predict success for tiny house communities.
- A design for a tiny house or community of tiny houses to be implemented for a certain purpose, such as a homeless village, series of guest lodgings, student housing, or “in-law” residences for aging in place.

#### AUTHOR'S CONTRIBUTIONS

The manuscript is an excerpt of Ms. Ford's master's thesis in interior environments. Dr. Gomez-Lanier was Ms. Ford's thesis advisor. Ms. Ford developed the manuscript, contributed the literature review, and collected information of the design trends and issues affecting the movement of tiny homes in the United States and overseas. Dr. Gomez-Lanier reviewed and edited the manuscript at various phases as well as contributed to the collection of data.

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