The Ecological Footprints of Tiny Home Downsizers:

An Exploratory Study

Maria W. Saxton

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Annie R. Pearce, Committee Chair
Frederick E. Paige
John G. Wells
Kevin W. Jones

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ABSTRACT

With our country's unsustainable building practices in the residential sector, there is a need to explore new types of housing to mitigate the negative environmental impacts of current building customs. Recently, there has been a surge of interest in tiny homes characterized as livable dwelling units typically under 400 square feet. However, there is a gap in scholarly knowledge that formally examines how the environmental impact and behaviors of tiny home occupants change after downsizing from a larger home.

The purpose of this study was to provide measurable evidence to explore the relationship between downsizing to a tiny home and the corresponding environmental impact. This study, which employed an exploratory sequential mixed design approach, was conducted to measure the ecological footprints of tiny home downsizers. Eighty individuals who have lived in their tiny homes for at least a year volunteered to take an online survey used to calculate their ecological footprints in prior larger homes and current tiny homes. Following the survey, nine interviews were conducted to create an inventory of noteworthy behaviors in each participant's lifestyles that potentially influence ecological footprint changes. Data collected from the survey and interviews were analyzed separately and then comparatively to explore relationships between tiny home living and environmental impacts.

This study found that among 80 tiny home downsizers located across the United States, the average ecological footprint was 3.9 global hectares (gha). This footprint was substantially less than the average previous ecological footprint of 7.0 gha and the national average of 8.4 gha. All five footprint components were positively influenced, showing that downsizing can influence many parts of one's lifestyle. Over 100 behaviors were identified that could contribute to ecological footprint changes.

The overall insights derived from this study indicate that positive environmental impact behaviors outweigh negative ones by approximately six to one when downsizing to a tiny home. In addition, 100% of participants demonstrated an overall positive ecological footprint. The findings and conclusions of this study provide important insights for the sustainable housing industry that can inform policy and practice, with implications for future research in the sustainable residential field.

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GENERAL AUDIENCE ABSTRACT

With our country's unsustainable building practices in the residential sector, there is a need to explore new types of housing to mitigate the negative environmental impacts of current building customs. Recently, there has been a surge of interest in tiny homes characterized as livable dwelling units typically under 400 square feet. However, there is a gap in knowledge to understand how the environmental impact and behaviors of tiny home occupants change after downsizing from a larger home.

The purpose of this study was to see whether there is a relationship between downsizing to a tiny home and a changing environmental impact. This study measured the ecological footprints of tiny home downsizers. Eighty individuals who have lived in their tiny homes for at least a year volunteered to take an online survey used to calculate their ecological footprints in prior larger homes and current tiny homes. Following the survey, nine interviews were conducted to identify noteworthy behaviors in each participant's lifestyles that potentially influence ecological footprint changes. Findings were analyzed and compared to explore relationships between tiny home living and environmental impacts.

This study found that among 80 tiny home downsizers located across the United States, the average ecological footprint was 3.9 global hectares (gha). This footprint was substantially less than the average previous ecological footprint of 7.0 gha and the national average of 8.4 gha. All five footprint components were positively influenced, showing that downsizing can influence many parts of one's lifestyle. Over 100 behaviors were identified that could contribute to ecological footprint changes.

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Dedication

This dissertation is dedicated to Rachel Saxton, whose strength and resilience was a constant inspiration throughout this process.

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CHAPTER ONE: INTRODUCTION

General Background

In 1987, an urgent call was issued to the World Commission on Environment and Development by the General Assembly of the United Nations to develop a "global agenda for change" to address sustainability on a global scale. As a result, *Our Common Future*, also known as the *Brundtland Report*, was developed which is often referenced when exploring what the term "sustainability" means in a given context. Sustainable development was defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment & Development, 1987). Thus, sustainability should serve both short-term and long-term goals while advancing environmental protection, social responsibility, and economic practices, while promoting public environmental awareness and action.

Sustainability can be applied to a variety of contexts, particularly within the building industry. Buildings account for 40% of carbon dioxide emissions and 70% of the electricity load in the United States, which is more than any other sector (EIA, 2017; Negat et al., 2015; USGBC, 2004), and three-quarters of total energy consumption in buildings is in the residential sector (IEA, 2013; Friedman, 2007; Negat et al., 2015). CO2 emissions in homes generally come from the product of energy for heating and cooling, lighting, appliances, and other electric equipment. The environmental impacts from buildings are even greater if the CO2 emissions from the manufacture and transportation of building materials, demolition, and other building activities are considered (USGBC, 2004).

In recent decades, the building trend has been to "go big" (Foreman & Lee, 2005; Vail, 2016), and newly constructed homes in the United States generally have the largest average square footage compared to any other country in the world (Palmeri, 2012). Large homes are often considered a symbol of status (Wilson & Boehland, 2005) and these single-family homes comprise 63% of residential dwellings in the United States (Wilson & Boehland, 2005; Withers, 2012). Home size has also increased in recent decades; in 1973, the average square footage of a newly constructed home in the U.S. was 1,660 square feet (US Census Bureau, 2017), and in 2017, the average was 2,631 square feet (Mitchell, 2014; US Census Bureau, 2017; Vail, 2016) -- a 63% increase. This substantial increase in home size causes a number of detrimental environmental impacts, including loss of land, greater air pollution and energy consumption, and ecosystem fragmentation which leads to reduced diversity of species, and many other negative impacts (Johnson, 2001; Parrott, 1997; Wilson & Boehland, 2005; Wither, 2012). This current building trend can have major negative implications for the environment, since building size is one of the largest predictors of energy consumption for a building (Huebner & Shipworth, 2017; Sandberg, 2018; Wilson & Boehland, 2005).

In addition to building size, studies have shown that occupant behavior greatly influences the energy consumption in a building (Haas et al., 1998; Sandberg, 2018; Santin et al., 2009; Steg & Vlek, 2009). This is especially evident in the United States; in fact, if everyone on the planet were to live like the average American, we would need almost five Earths to provide enough resources to accommodate these behaviors (Global Footprint Network, 2018a). To help reduce an individual's ecological footprint to only require one planet or less, the built environment must be designed more efficiently, and individuals need to behave differently. This underscores the importance of encouraging the residential sector to begin adopting innovative

solutions and approaches to address both housing size and occupant behaviors (Friedman, 2007; Sandberg, 2018; Withers, 2012).

Tiny homes are developing as a potentially viable solution to reduce building material waste and excessive consumption within the residential industry while countering housing trends of recent decades which have valued quantity over quality (American Chemistry Council, 2015; Ford & Gomez-Lanier, 2017; Turner, 2017; Withers, 2012). There is not one common definition for a tiny home, though generally, a tiny home is a small efficient space typically under 400 square feet (but up to 500 square feet) that often enables homeowners to live a more environmentally conscious, financially stable, and minimalist lifestyle (Campbell, 2015; Small House Society, 2014; Turner, 2017; Vail, 2016). Within the context of this research, a tiny home will specifically refer to a standalone, land-based home under 500 square feet.

The concept of minimalist living has existed for centuries; however, the modern tiny house movement has only been gaining momentum since the early 2000s when one of the first tiny home building companies was founded. The original founder of Tumbleweed Tiny Homes, Jay Shafer, is often considered the inventor of this modern movement. This increasingly popular movement (Campbell, 2015; Dickinson et al., 2016) is largely based on the 20th century mindset that "less is more" (Anson, 2014; Bozorg & Miller, 2014; Ford & Gomez-Lanier, 2017; Heben, 2014), but has roots in the 19th century movements of romanticism and transcendentalism of Ralph Emerson and Henry Thoreau (American Chemistry Council, 2015; Anson, 2014; Ford & Gomez-Lanier, 2017). In recent years, there has been an architectural movement exploring stand-alone homes that mimic a modern home on a smaller scale. This movement has been gaining momentum as tiny home festivals, conferences, workshops, television shows, and more have become commonplace. This movement is not only becoming popular in the United States; other

countries such as Australia have witnessed a recent surge of interest in tiny homes (Boyd & Clouston, 2004; Campbell, 2015).

Tiny homes are not only smaller than conventional homes but are often built on mobile foundations, which allows them to be transported to various locations (Mitchell, 2014). Unlike recreational vehicles, however, these homes are generally meant to be permanent residences for their occupants and are built to mimic the modern American house (Bozorg & Miller, 2014; Foreman & Lee, 2005). Additionally, these homes are often built with high quality, local materials and often implement green technologies such as solar and greywater harvesting, enabling them to be off-grid (Anson, 2014; Boyd & Clouston, 2004; Bozorg & Miller, 2014; Calluari & Alonso-Marroquín, 2017; Vail, 2016; Wheeler, 2015).

Because of the negative environmental impacts of traditionally larger homes within the residential sector, research in the tiny home field could potentially improve the understanding of how the experience of downsizing into and occupying a tiny home influence one's environmental impact. The limited academic literature on tiny homes has suggested that tiny homes promote smaller environmental impacts for their occupants (American Chemistry Council, 2015; Bozorg & Miller, 2014; Ford & Gomez-Lanier, 2017; Kahn, 2012; Mitchell, 2014; Susanka & Obolensky, 2001; Technavio, 2018; Turner, 2017; Vail, 2016). However, there is a gap in scholarly research regarding how the environmental impact and behaviors of occupants change after downsizing to a tiny home (Anson, 2014). To provide measurable evidence behind the claimed notion that tiny homes reduce one's environmental impact, this study aims to understand how an individual's ecological footprint and behaviors are influenced by living in a tiny home. This study will examine some of the underlying influences that tiny

home living has on individual behaviors, and what these influences may implicate for downsizing in the future.

An ecological footprint is one way to measure an individual's environmental impact by calculating their spatial footprint in terms of global hectares considering housing, transportation, food, goods, and services. An ecological footprint is a three-dimensional metric, considering economic, environmental, and societal aspects of sustainability (Martins et al., 2007). An ecological footprint converts many types of impacts into a single unit of measure, allowing for meaningful comparisons to be made between different combinations of impacts that could not otherwise be easily compared. While an ecological footprint does not provide an extremely detailed and comprehensive view of one's environmental impact, it helps to provide a sense for perceived impacts in a measurable way.

To explore questions of sustainability and occupant behaviors in the built environment, this research contributed a formal study to fill a gap in the relatively unexplored academic tiny home field, to investigate how downsizing to a tiny home changes one's ecological footprint and identify what behaviors influence this change.

Rationale for the Study

Tiny homes offer the opportunity for home occupants to reduce their ecological footprint through smaller building sizes, fewer material possessions, and more awareness of consumption habits (Bozorg & Miller, 2014; Ford & Gomez-Lanier, 2017; Vail, 2016). Tiny homes can help reduce the environmental impacts of the residential housing sector by offering a way to build many homes within a small area and by lowering the negative impacts of housing as a whole through fewer building materials and less energy consumption.

By downsizing to a tiny home, individuals can potentially decrease their environmental impact on the Earth by a significant amount (American Chemistry Council, 2015; Bozorg & Miller, 2014; Ford & Gomez-Lanier, 2017; Huebner & Shipworth, 2017; Kahn, 2012; Mitchell, 2014; Susanka & Obolensky, 2001; Technavio, 2018; Vail, 2016), and tiny home occupants are often pushed, throughout the downsizing process, to become more aware of, and respond more to, environmental challenges (Anson, 2014). For example, tiny home occupants who experience extreme space constraints are more aware of what they can purchase for their homes, and as such, respond by purchasing substantially less which decreases their environmental impact.

For this research, the term "downsizing" refers to the act of moving from one home to another with a square footage of less than half, in addition to lifestyle changes such as reducing material possessions and changing behaviors to accommodate this housing change. Within the specific context of this research, downsizing refers to moving into a tiny home of 500 square feet or less from a previous housing type of more than double their tiny home's square footage.

The Oregon Department of Environmental Quality (DEQ) released a study in 2010 which found that reducing the square footage of one's home is the single most effective measure for reducing one's impact on the environment (DEQ, 2010; Palmeri, 2012). By conducting a life cycle assessment (LCA) of a 2,262 square foot medium home versus an "extra-small home" of 1,149 square feet, the DEQ study found that across all categories (including energy use, materials production, construction phase, maintenance phase, demolition phase, and transportation of materials), the environmental impact of the "extra-small home" was significantly smaller-- nearly 40%-- than that of the medium standard home (DEQ, 2010).

While the average square footage of a new home built in the United States in 2017 was about 2,600 square feet, the average size of a tiny home size is about 300 square feet (Mitchell,

2014; US Census Bureau, 2017). Additionally, homes that use recycled materials also have substantially reduced environmental impacts (DEQ, 2010). Therefore, with these DEQ study findings in mind, tiny homes can potentially have even more significant environmental savings than a 1,149 square foot "extra-small home", considering their smaller sizes and a tendency for recycled materials (Campbell, 2015; Murphy, 2014; Withers, 2012). Figure 1.1 conceptually illustrates the environmental impacts of an average sized home with a tiny home.

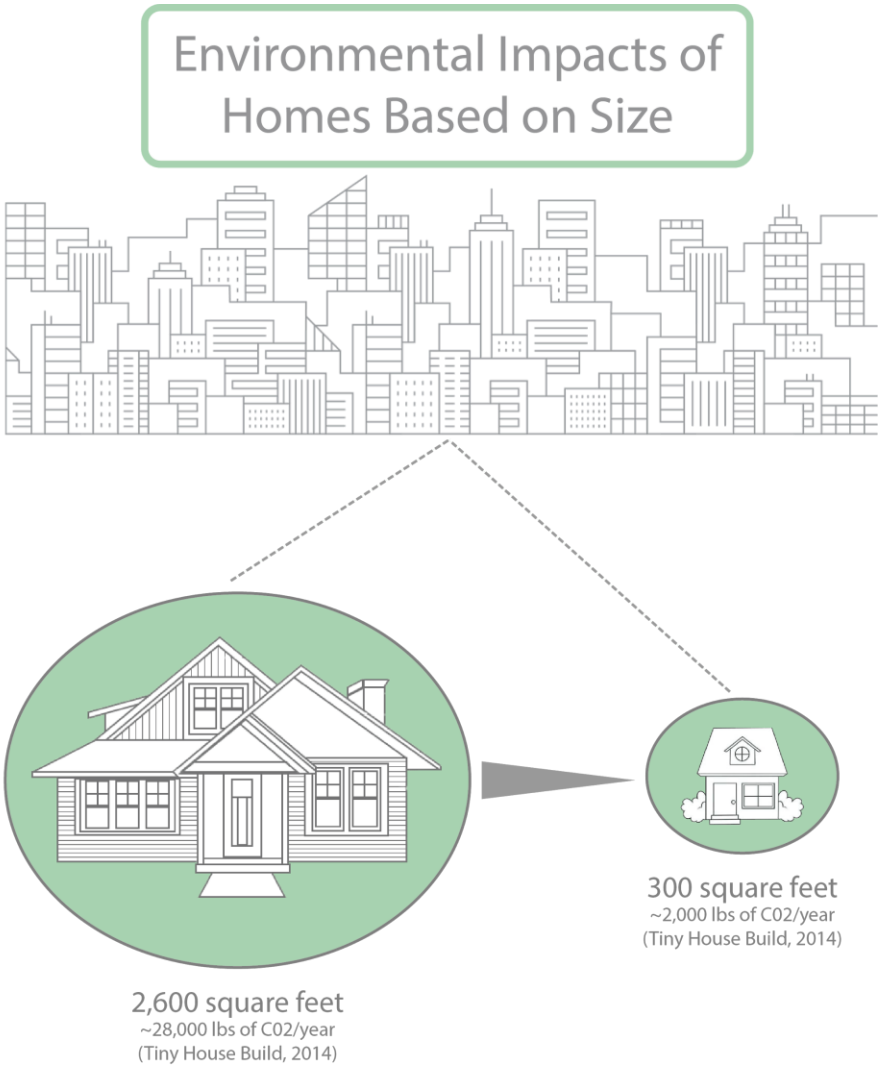

Figure 1.1. Environmental impacts of homes diagram.

Formal academic literature on tiny homes has recently been emerging as interest in this innovative housing type has increased, although it is limited in terms of quantity and also quality

(Anson, 2014; Ford & Gomez-Lanier, 2017). Much of the tiny home literature at the time of this writing consists of news articles, blogs, personal narratives, and television shows, rather than peer-reviewed, academically published literature (Ford & Gomez-Lanier, 2017). Most of the published literature that does exist uses unpublished resources such as blogs, newspaper articles, and television shows, largely due to a lack of academic literature to start with. This presents a gap in knowledge and a need for research to understand the role or downsizing and explore sustainable construction practices within this unique segment of the built environment.

The existing literature has asserted without quantitative evidence that individuals who downsize to tiny homes will have a significantly smaller environmental impact, particularly because they are forced to confront their material consumption (American Chemistry Council, 2015; Anson, 2014; Bozorg & Miller, 2014; Ford & Gomez-Lanier, 2017; Kahn, 2012; Mitchell, 2014; Susanka & Obolensky, 2001; Technavio, 2018; Vail, 2016). On the other hand, some literature also expresses that tiny home living can sometimes lend itself to negative environmental practices such as driving longer distances, eating out more often, and recycling less (Anson, 2014; Carras, 2019; Mitchell, 2014; Williams 2014). Based on a thorough review of published literature on tiny homes, no scholarly studies exist that comprehensively examine one's changing environmental impact with respect to downsizing to a tiny home, and what behaviors influence this change. This literature review is presented in the next chapter.

This research explored whether tiny homes do, or do not, promote a more environmentally-friendly lifestyle for their occupants. To comprehensively examine one's environmental impact, behavioral choices related to housing, food, transportation, goods, and services needs to be considered. A sustainability metric assesses performance against certain sustainability indicators, then translates this information to a scale and assigns a rating (Cowlin

et al., 2015). This process measures progress towards sustainability (Martins et al., 2007; Sikdar, 2003), and is often referred to as an "indicator" (Sikdar, 2003). Metrics that examine progress (for example, those with an environmental focus) measure the impact of a certain value (for example, driving distances) (IChemE, 2002). For the context of this research, a metric refers to a set of measurements to calculate an individual's environmental impact. This research will use a footprint metric, specifically the ecological footprint. An ecological footprint, as defined in this research, is a metric used to calculate human demand on nature by providing a measurement of land needed to sustain current consumption behaviors of an individual or other definable entity, such as a household or community.

The term "ecological footprint" has been around as early as 1990 when Mathis Wackernagel and William Rees developed the concept and calculation methodology with the goal of "translating sustainability concerns into public action" (Wackernagel & Rees, 1996). Today, many ecological footprint calculators exist that are available online and easily distributed to many. Upon comparing multiple calculators (outlined in Chapter 2), the Global Footprint Network Ecological Footprint calculator was selected for this study for its strong methodology, adherence to ecological footprint standards, and validation through regular reviews and revisions. The online survey employed in this study uses questions directly from the Global Footprint Network ecological footprint calculator, in addition to screening questions and follow-up questions.

By distributing an online survey to tiny home downsizers across the United States and by interviewing select tiny home downsizers, this research provides insight into how ecological footprints change after downsizing to a tiny home. The results of the online survey were used to measure individual's ecological footprints both before and after downsizing to a tiny home.

Follow-up interviews helped to uncover the behaviors behind the changes in ecological footprints. This research provides measurable results that may be used by future researchers to give insight into how downsizing influences behaviors and resulting environmental impacts.

Research Problem & Purpose of the Study

Considering the earlier discussion, the problem statement for this study was as follows: To understand how downsizing specifically to a tiny home can lower the negative impacts of the housing sector, and to critically examine the existing literature that asserts the positive environmental benefits of tiny homes, *this research provided measurable evidence to investigate the relationship between changing ecological footprints and individual behaviors after downsizing to a tiny home that is less than 500 square feet.*

This research aimed to investigate tiny homes as a potentially effective way to reduce the environmental impacts in the residential building sector. The study explored the effects of downsizing on an individual's ecological footprint by using the Global Footprint Network ecological footprint calculator. To achieve this, the four main objectives of this study were to:

1) Measure tiny home occupant's current ecological footprints,
2) Compare these ecological footprints to previous ecological footprints in prior housing and to national averages,
3) Determine what components of an individual's ecological footprint are most affected both positive and negatively,
4) Determine which behaviors influence changes in ecological footprints after downsizing to a tiny home.

These objectives were accomplished by distributing an online survey to tiny home downsizers across the United States to provide quantitative data about their ecological footprints followed by

interviewing select participants to determine, qualitatively, what behaviors relate to changes in ecological footprints. Figure 1.2 represents the research guide for this study.

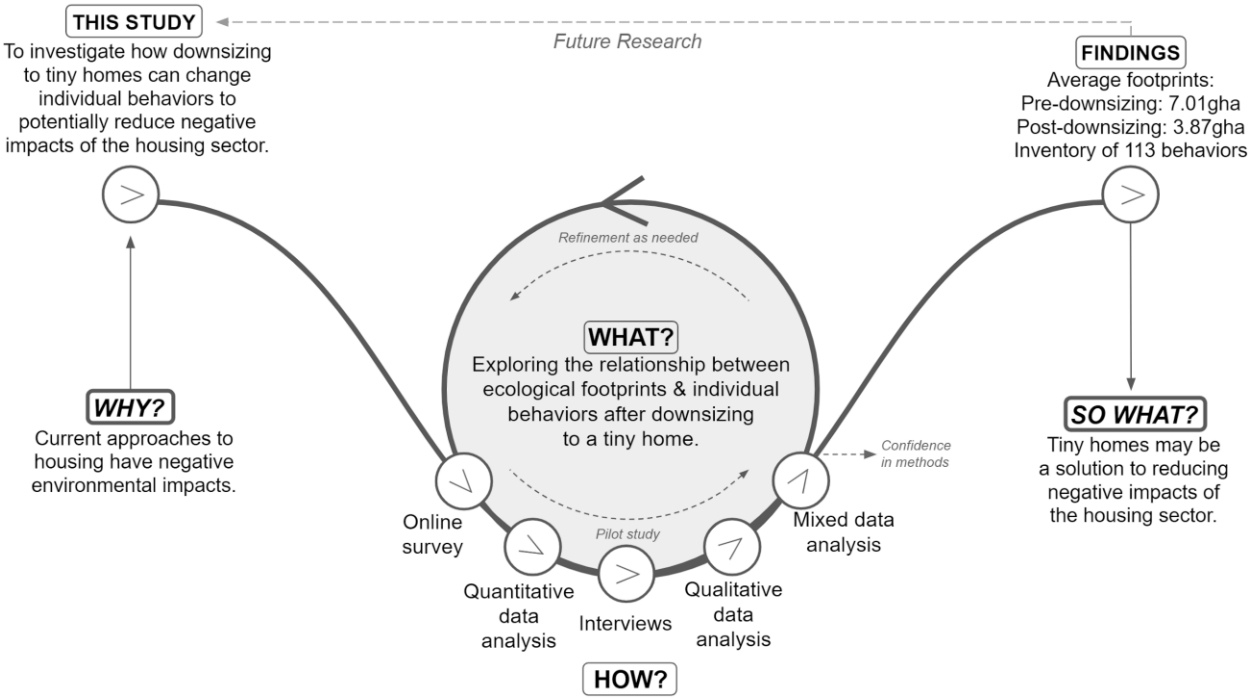

Figure 1.2. Research guide for this study.

The purpose of Figure 1.2 is to the whole study in one single diagram.. First, it starts with the "why" of this research, which is that current approaches to housing have negative environmental impacts. Next, it shares that this study was aimed to investigate how downsizing to tiny homes can influence behaviors to potentially reduce negative impacts of the housing sector. The central point of this diagram, the "what", summarizes the overall research question.

Following the flow of the line on the bottom, the diagram shows "how" the study was conducted. The first phase was an online survey and the second phase was a series of interviews. The data analysis first started with quantitative data following the online survey, then qualitative data following the interviews. Then, this data was mixed to understand the relationship between the two.

To reflect the iterative process of this research, the dotted line in the circle shows how the

pilot study followed these steps. Then, aspects of the study were refined based on the pilot study. And, once the research methods ensured confidence, the researcher went back through this process for the actual study.

In the top right corner is a summary of the key findings that will be discussed in Chapter 4, and these findings show us how tiny homes may be a solution towards reducing negative impacts of housing. Lastly, the dotted line on top labeled "future research" shows that the findings lead to ideas for future research to address the goals of this study. In other words, this is a study that lays the groundwork for future studies.

Research Questions

The research questions for this study were derived from the problem statement and literature review. These questions aim to explore and understand the process of downsizing to a tiny home and how it affects one's environmental impact. They address relationships between housing types, individual behaviors, and resulting ecological footprints.

RQ: After downsizing to a tiny home (less than 500 square feet), what is the relationship between changing ecological footprints and individual behaviors?

Sub-Q1: How does the average annual ecological footprint of tiny home downsizers compare to **a)** their ecological footprints in previous housing, and to **b)** national averages?

Sub-Q2: What components of an individual's ecological footprint are most influenced positively and negatively after downsizing to a tiny home?

Sub-Q3: What behaviors contribute to changes in the ecological footprints of tiny home downsizers?

Research Scope

Limitations can have potential impacts on the quality of findings and a researcher's ability to comprehensively answer research questions (Creswell, 1994). Delimitations are the boundaries a researcher purposely sets for a study that may influence the results of a study; limitations are influences that a researcher cannot control.

Delimitations

1) The study will be confined to only tiny home downsizers living in the United States. Although tiny homes exist worldwide, this scoping choice was made to manage the amount of data included in this study and allow for meaningful comparisons to be made between various regions of the United States.
2) This study only included tiny homes with a square footage of 500 feet or less, in order to manage the scope to one type of housing and demonstrate the influences of homes with dramatically small square footages. A broader study that examined multiple types of housing would likely produce somewhat different and likely less dramatic results.
3) Only individuals who moved from one home to another with a square footage of less than half will be considered, to show drastic changes in housing choices and establish parameters for the study. For instance, if someone had downsized from a 2,400 square foot house to a 300 square foot tiny house, they would be included in this study. If someone had downsized from a 900 square foot apartment to a 500 square foot tiny home, they would not be included in this study. People who "upsized" to tiny homes from a state of homelessness or transitional housing were outside the scope of this study and were not be included.

4) Only individuals who have lived full-time in a tiny home for a year or more were considered in this research. This allowed for research participants to be able to reflect on their consumption habits over the course of the past year.
5) Only individuals who lived in standalone, land-based tiny homes were considered in this research to ensure a focus solely on traditional tiny homes to manage the scope for this study. This eliminated housing types such as campers, micro apartments, boats, and other similar types of housing from being examined in detail.
6) Interview participants were purposefully selected based on their online survey results with a focus on those who identified stronger relationships between their behaviors and downsizing to a tiny home, which allowed closer examination of extreme cases but not of typical cases. This stratified, purposeful sampling of the population could decrease the generalizability of the findings but better enabled the behaviors of interest to be examined since they represented the extremes and were therefore more likely to be notable and observable.
7) Interviews were conducted on the phone, rather than in person, for logistical reasons including travel and expense. This approach did not allow for in-person observation of the home, which potentially limited the depth of data for each interview. However, phone interviews allowed for more interviews altogether.
8) In depth- statistical analysis methods were not included within the scope of this study.

Limitations

1) Survey participants volunteered to participate in the online survey, which allowed for volunteer bias and sampling error. Therefore, this research will not be generalizable to all tiny home occupants. Measures were taken to enhance generalizability, such as

comparing the demographic data from the study sample to general demographics data of the whole tiny home population as established by The Tiny Life (2013).

2) The ecological footprint calculator used in this study relies on self-reported behaviors. This approach may lower the validity and reliability of this study by introducing self-reporting response bias. Research participants might have been unwilling or unable to answer questions accurately for multiple reasons, including but not limited to social desirability, limited time, or a sense of reluctancy. The survey used in this study allowed participants to take as long as needed, did not require participants to provide contact information, and participation was on a volunteer-only basis. However, it is important to remember that the study results may be skewed to portray study participants in a more positive light than what was reality. Ideally, this study should be repeated with a random sample to verify changing behaviors.
3) Research participants were primarily contacted through online resources, resulting in coverage error (Dillman et al., 2009) since tiny home occupants who do not have an online presence or live off-grid were not be properly represented.
4) An ecological footprint calculator, by design, is intended to calculate human demand on nature by providing a measurement of land needed to sustain current consumption behaviors. For this study, the footprint calculator was used to help us understand how environmental impacts are influenced after downsizing. However, the Global Footprint Network Ecological Footprint calculator is not 100% comprehensive, as it does not cover every possible influence of one's encompassed ecological footprint. This calculator was identified as covering the most material and being the most relevant to this research, and the interviews were used to uncover further details about what behaviors influence

changes in ecological footprints.

Understanding the limitations of this study can help to guide interpretation of results and design of future studies. Future studies will be explored in Chapter 5. The next section will describe a summary of the study.

Summary and Structure of the Study

The first phase of this study included an online survey to measure how the ecological footprints of tiny home downsizers change. The second phase included a series of interviews to understand which behaviors change after downsizing. The tangible outcomes included a measure of difference in the ecological footprints of people who downsize to tiny homes and an inventory of behavioral influences behind these differences. Additionally, meaningful insights are illuminated by comparative data analysis, such as what age groups or income levels have the smallest ecological footprints. The findings from this research add to the scholarly research and literature in the sustainable residential field, to potentially improve both practice within the field itself along with policy related to tiny homes.

Dissertation Organization

This dissertation is organized into five chapters. This first chapter provided a general overview to understand the problems behind this research, introduced the context of the research problem, and provided the rationale to conduct this research, which led to the research question and sub-questions. These questions were then followed by the limitations of the study to establish the scope and boundaries of the research.

Chapter two contains a review of the literature to establish a point of departure for this research. This literature review focuses on a thorough discussion of tiny homes and ecological footprint calculators.

Chapter three presents the research design and methods of this study, including the reasons for choosing the mixed methods approach, research design, the criteria for selecting participants, and data collection and analysis techniques for both the pilot study and main study.

Chapter four discusses the summary data from the online survey and interviews, followed by findings for each research question and a summary of the findings. Lastly, Chapter five presents the conclusions for each research question, the implications of these findings, and recommendations for researchers and the general public.

CHAPTER TWO: LITERATURE REVIEW

General Review of the Broad Field

The goal of this research is to examine the relationship between downsizing to a tiny home and changes in ecological footprints. As such, this chapter reviews the literature pertaining to tiny homes and ecological footprint calculators.

Tiny Homes

The tiny house movement is on the rise with more and more individuals, couples, and families choosing to reduce the square footage of their homes. The United States, specifically, accounts for a global market share of close to 88%, leading the tiny home market on a global scale (Technavio, 2018). There is no explicit definition of a tiny home since this is a relative term depending on who uses it. Generally, the relevant literature refers to a tiny home as a livable dwelling under 400 square feet (Small House Society, 2014; Vail, 2016). Tumbleweed Tiny Homes, perhaps the most well-known tiny home building company in the United States, builds homes that are 200 square feet on average (Tumbleweed Tiny Homes, 2018), which is about the size of two parking spaces. A popular range for a tiny home is between 60 and 500 square feet (Technavio, 2018; Waldman, 2017; Wu & Hyatt, 2016). The Appendix Q in the 2018 International Residential Code states that tiny homes are "400 square feet in area or less". For this research, a tiny home will be considered a stand-alone, land-based home under 500 square feet (Small House Society, 2014; Vail, 2016). The first part of this section will provide an overview of the tiny home movement based on what is described in the popular literature. This section will conclude by discussing the limited academic literature relevant to tiny homes.

Overview of Tiny Homes

It is estimated that the tiny home global market will grow approximately 7%, or by 5.18 billion between 2018 and 2022 (Technavio, 2018). This increasingly popular tiny house movement (Dickinson et al., 2016; Technavio, 2018) is largely based on the 20th-century mindset that "less is more" (Anson, 2014; Bozorg & Miller, 2014; Ford & Gomez-Lanier, 2017; Heben, 2014; Wu & Hyatt, 2016). It is important to note, however, that the concept of living "tiny" is not new. The core principles behind this movement have been evident for centuries. However, there has been a recent architectural movement exploring stand-alone homes that mimic a modern home but on a small scale, and this research will examine this specific movement. To illustrate the increased interest over time, Figure 2.1 shows the Google Trends increase for the search term "tiny houses" on a monthly basis between January 2004 and January 2019.

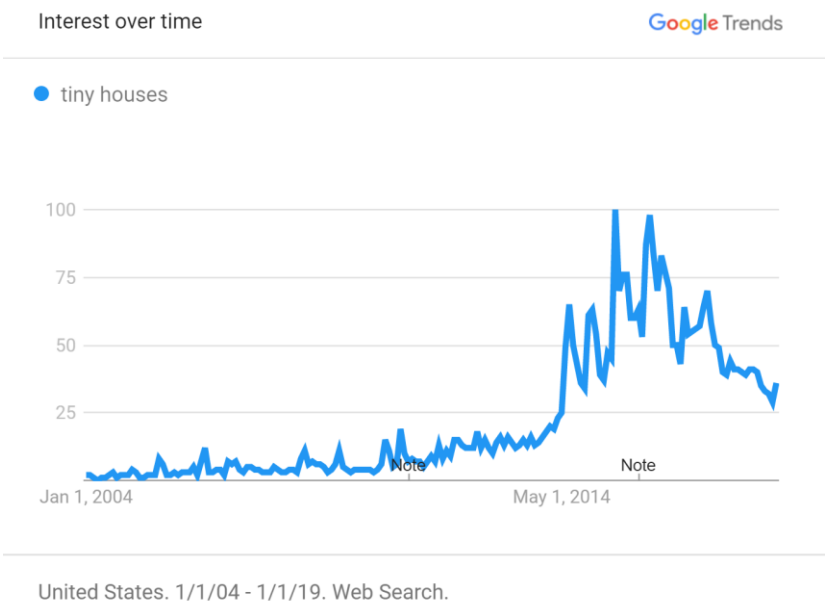

Figure 2.1. Google Trends interest over time for search term "tiny houses".

Interest spikes in 2014, which was when the first tiny home show, 'Tiny House Nation' debuted. Interest surged after 2014 and then leveled off, but at a higher level. The Y-axis shows

search interests compared to the highest point on the chart. A value of 100 (near May 2014) is the peak popularity for the time range. Likewise, a value of 50 shows that the search term was half as popular. A higher value means a higher proportion of all searches, not a higher absolute search count. The two 'notes' indicate when there were improvements to Google's data collection procedures. Google Trends also share which states and cities searched the term "tiny houses". States in the Northeast (Maine and Vermont) search the term "tiny houses" more than any other region in the United States. In contrast, three out of five of the top cities are located in the state of Texas (Austin, San Antonio, and Plano, Texas).

Tiny homes are not only smaller than conventional homes but are often built on mobile foundations, which allows them to be transported to various locations (Mitchell, 2014; Wheeler, 2015). Unlike recreational vehicles, however, these homes are generally meant to be permanent residences for their occupants and are built to mimic the modern American house (Bozorg & Miller, 2014; Foreman & Lee, 2005). Though many individuals make tiny homes their permanent residences, others purchase or build them as home offices, in-law suites, or as homes for returning adult children. These homes are often built with high quality, local materials and offer a more sustainable approach to traditional housing (Anson, 2014; Askham, 2014; Bozorg & Miller, 2014; Vail, 2016). Additionally, these homes are often off-grid and implement sustainable technologies such as solar or rainwater harvesting (Calluari & Alonso-Marroquín, 2017; Wheeler, 2015).

As noted in the non-academic literature, many have purposefully downsized to tiny homes to seek a more sustainable lifestyle to offset the environmental impacts of conventional homes. With a smaller physical square footage, tiny homes occupants can potentially reduce their ecological footprint on heating and cooling while purchasing fewer material possessions

(Askham, 2014; Susanka & Obolensky, 2001; Vail, 2016; Wu & Hyatt, 2016). A thesis study that interviewed tiny home occupants found that the primary motivations for downsizing include interest in a simpler life, sustainability and environmentalism, cost, freedom and mobility, a sense of community and an interest in design (Mutter, 2013). Downsizers are seeking a fundamentally different approach to housing than the traditionally larger homes which have dominated development patterns in the United States for decades (Foreman & Lee, 2005; Mitchell, 2014; Murphy, 2014; Susanka & Obolensky, 2001; Withers, 2012). Additionally, a key driver that has driven the tiny home movement is the cost-intensive construction of conventional homes (Technavio, 2018).

These tiny homes are often architecturally unique, customized homes where the homeowners often have an entrepreneurial, do-it-yourself attitude (Susanka & Obolensky, 2001). They have been popularized on television and are typically fully functional and independent from other homes (Bozorg & Miller, 2014; Foreman & Lee, 2005; Vail, 2016). Tiny homes creatively utilize interior space and often implement the use of innovative technologies. Tiny homes often have a kitchen, bathroom, bedroom area, living space, and porch (Turner, 2017). They tend to have higher quality materials than typical transportable homes and are often built to be off-grid unlike most trailers, mobile homes, and recreational vehicles (Heben, 2014). They are either built by an individual themselves or purchased from a building company. The cost of a tiny home can vary greatly depending on who builds it and what amenities it provides (Turner, 2017). Some tiny homes can be built or bought for $20,000 or less, while some are sold for $100,000 or more. Currently, there are over 60 tiny home building companies in the United States, ranging in services that can fully customize and build a home or can simply provide do-it-yourself kits and plans (Anson, 2014; Kahn, 2012). These builders are scattered across the

country, but are currently densely located in Colorado, Texas, Florida, and California. Most tiny home builders will ship their completed tiny homes anywhere in the United States, since they are are commonly built on mobile trailers for easy transportation (Byram, 2017; Ford & Gomez-Lanier, 2017; Heben, 2014; Murphy, 2014; Priesnitz, 2014; Wheeler, 2015).

A notable challenge of the modern tiny home movement is complying with code and zoning restrictions. In many municipalities, there is a mandated minimum size for residential dwellings, even if they are considered second units (Wilson & Boehland, 2005; Withers, 2012). In fact, many municipalities do not allow second occupied units of any size on a single parcel (Withers, 2012). Typical code restrictions include enforcing minimum square footage requirements for habitable spaces, water and sewer connection requirements, clearance and setback requirements, and requirements for permanent heating (Turner, 2017). These restrictions often make building a tiny home financially infeasible and can result in building illegal tiny homes that do not follow code restrictions and "fly under the radar," which presents additional problems for individuals if they are discovered.

Tiny Home Downsizers

The two main demographics of downsizers are millennials (young adults under 30) who want the freedom of not being tied down by a mortgage, and recently retired baby boomers (over 50 years of age) who are seeking a simplified lifestyle (Bozorg & Miller 2014; Foreman & Lee 2005; Heben 2014; Murphy 2014). A review of scholarly literature generally supports these two demographic categories, but also shows that these categories are not exhaustive (Bozorg & Miller, 2014; Foreman & Lee, 2005; Heben, 2014; Murphy, 2014). Technavio, a global market research company, found that retirees and individuals over the age of 50 account for most tiny home occupants globally. This number is expected to rise with the increase of baby boomers and

early Generation X individuals who are expected to retire within the next decade (Technavio, 2018). In contrast, a survey by The Tiny Life found that approximately 2 out of 5 tiny homeowners are over 50 years of age, with the age breakdown as follows: 21% under 30 years of age; 21% between 30 and 40 years of age; 18% between 40 and 50 years of age; and 38% over 50 years of age (The Tiny Life, 2013). This study provides a point of comparison to weigh how Technavio and The Tiny Life's age breakdowns compare to this study's data. This will be described in Chapter 4.

The literature makes it clear that downsizers choosing to build and live in tiny homes do it for many reasons, including the desire to reduce their environmental impact, live with fewer debts, and have more time and freedom to focus on families, hobbies, and travels (Byram, 2017; The Tiny Life, 2017; Vail, 2016; Vail 2016; Wilkinson, 2011). Tiny homes also appeal to preppers and those aspiring to own their own home. Individuals who choose to build their own tiny homes also need to have access to tools and a workspace and have ample time to dedicate. Very few tiny home households have children, although proponents of the movement advocate for raising children in tiny home environments (Bozorg & Miller, 2014). Overall, individuals, couples, and families who are making a conscious decision to downsize to tiny homes are all making a conscious decision towards simpler living (Bozorg & Miller, 2014).

In 2013, a survey of tiny home households was conducted by The Tiny Life, an online resource for tiny living. They identified basic demographic information of tiny home occupants based on this survey, including age, gender, income, and educational levels. This survey found that more women (55%) own tiny houses than men (45%), and the average income of individual tiny home occupants is $42,038, which is $478 more than the average American. Additionally, tiny home occupants are twice as likely to have a master's degree as the average American. An

infographic of this data can be found online on The Tiny Life website (The Tiny Life, 2013). It is important to note that this infographic does not identify how many tiny home households were included in the study, so it remains unknown whether these demographic characteristics are generalizable. Previous studies have stratified their respondents according to factors including basic demographic information (age, gender, income, educational levels, etc.), location, reasons for downsizing, who they live with, employment status, and previous living situations.

Environmental Impacts of Tiny Homes

Tiny homes are widely touted as promoting a smaller ecological footprint for downsizers by generally reducing their consumption through smaller building square footage, fewer material possessions, and alternative sources of energy such as solar (Anson, 2014; Bozorg & Miller, 2014; Turner, 2017; Vail, 2016; Wu & Hyatt, 2016). Tiny House Build, an online resource for aspiring tiny home builders, compared the average house needs with the needs of a tiny home based on standard building emissions in relation to size. The following table (Table 2.1) shows their findings by comparing electrical, heating, and cooling emissions of an average home and a tiny home in a year (Tiny House Build, 2014).

Table 2.1

Annual CO2 Emissions Comparison

CO2 Emissions	Average Home	Tiny Home
Electrical	16,000 pounds CO2 per year	1,144 pounds CO2 per year
Heating	8,000 pounds CO2 per year	558 pounds CO2 per year
Cooling	4,000 pounds CO2 per year	286 pounds CO2 per year

Table 2.1 (cont'd)

Total CO2 Emissions	28,000 pounds CO2 per year	2,000 pounds CO2 per year

This table illustrates the potential savings of 26,000 pounds of CO2 emissions when comparing a tiny home to an average home. The assumption by many is that living in a home that emits less resources will enable an individual to live a more environmentally-conscious lifestyle. However, no formal studies have been conducted so far to confirm this. In fact, some literature even hints that tiny homes can unintentionally prevent some elements of sustainable living. Some examples of this include eating out more often due to small kitchens, driving longer distances due to remote locations, relying on others for storage due to lack of space to store personal belongings, inability to can foods and store bulk items due to small refrigerators and storage space, and additional marginal energy needed to heat and cool a tiny home in extreme weather due to a lack of foundation to regulate temperature (Anson, 2014; Murphy, 2014; Williams, 2014). These instances will be important to consider throughout this research.

Academic Literature on Tiny Homes

Since the tiny house movement has only recently gained traction, there is not much academic literature found on the subject (Anson, 2014; Ford & Gomez-Lanier, 2017). So far in this chapter, the sources have primarily been from popular literature such as websites and eBooks. While there has been a fair amount of media coverage on tiny homes in recent years, including television shows, documentaries, news articles, and blogs (Byram, 2017; Heben, 2014; Kahn, 2012; Vail, 2016), little academic discussion has been presented thus far, presenting a gap in knowledge (Anson, 2014; Ford & Gomez-Lanier, 2017). Most literature that exists come from

unpublished student theses and dissertations. However, well-known non-academic publications such as National Geographic, The New Yorker, and Architectural Digest have all run stories on tiny homes and the following they have accumulated in recent years (Anson, 2014).

Recent student work, including theses, dissertations, projects, and research presentations exist that begin to show a trend towards academic attention on tiny homes and their potential impacts on individual environmental impact. One particular student paper explores the theoretical potential for tiny homes to decrease the carbon footprint of their occupants, and in fact, makes a call to future researchers to explore the environmental benefits of downsizing to a tiny home (Carlin, 2014). Another student writes her thesis on the motivation of downsizers' decisions to live in a tiny home, based on 11 interviews of tiny home occupants, with environmental concerns being among the top reasons (Mutter, 2013). An undergraduate research paper makes the argument that tiny homes are a viable solution for those wanting to foster a stronger relationship with the environment and their communities (Kilman, 2016). Another thesis explores the design of an off-grid tiny home in Australia (Calluari & Alonso-Marroquín, 2017), while another offers an analysis of the tiny house movement (Hutchinson, 2016). Other student works discuss the trends of the tiny house movement and how they can be used as a sustainable and innovative housing approach (Bartlett, 2016; Beam, 2015; Dion, 2015; Hsiao, 2014; Mingoya, 2015; Schenk, 2015; Ubben, 2014; Wu & Hyatt, 2016; Wu, 2017).

These works tell us that there is interest among scholars in the tiny home field and that scholars are beginning to explore the relationship between tiny homes and the environmental impacts of their occupants. However, most of this academic work is discussion-based, rather than based on a tangible study. Therefore, there is a gap in knowledge of understanding the change in individual environmental impact after downsizing based on measurable evidence (Huebner &

Shipworth, 2017; Sandberg, 2018). Specifically, no studies have been conducted that rigorously examine the environmental impacts of individuals with respect to tiny homes, which is what this research aimed to explore.

It is important to mention that the existing scholarly literature on tiny homes widely uses unpublished material as references. For instance, Ford and Gomez-Lanier, who published the paper titled "Are Tiny Homes Here to Stay? A Review of Literature on the Tiny House Movement," has 17 references that directly relate to tiny homes. However, only three references are published scholarly papers-- the rest are news articles, tiny home websites, and personal narratives. Another example is Vail's paper titled "Saving the American Dream: The Legalization of the Tiny House Movement," which has 18 references also directly related to tiny homes, and yet none of them are scholarly papers. These references primarily consist of documentaries, television shows, blogs, and news articles. Another example is Anson's paper titled "The World is My Backyard: Romanticization, Thoreauvian Rhetoric, and Constructive Confrontation in the Tiny House Movement". This has 16 references directly related to tiny homes, but again none of them are scholarly papers, and consist primarily of blogs, news articles, and websites. Furthermore, there is a gap in knowledge of understanding the change in individual environmental impact after downsizing (Huebner & Shipworth, 2017; Sandberg, 2018). Specifically, no studies have been conducted that rigorously examine the environmental impacts of individuals with respect to tiny homes, which is what this research aims to explore.

Ecological Footprint

With an increasing population, there is an increased demand on the Earth's resources (Goudie, 2013; Nelson et al., 2006). Humanity is not living within the means of the Earth; evidence is growing that humans are quickly using the available resources on Earth and our

demand on the natural ecosystem is consistently increasing (Borucke et al., 2012; Global Footprint Network, 2010). In fact, if everyone lived like the average American, we would require approximately 4.9 Earths to sustain the resource consumption rates (Global Footprint Network, 2018a). A study found that by 2050, overall human demand on the Earth will use resources at 2.6 times the rate at which they can renew (Global Footprint Network, 2010; Moore et al., 2012). Technology advances, increased urbanization, and industrialization have all contributed to a large ecological footprint (Goudie, 2013; Nelson et al., 2006). These contributors are almost always interacting to influence the natural ecosystem; thus, their effects are combined to impact the environment (Nelson et al., 2006). Deforestation, ecosystem fragmentation, and waterway impairments are just a few examples of how human demand is exceeding the availability of resources on Earth and negatively impacting the environment (Borucke et al., 2012; Goudie, 2013).

Metrics showing our demand imposed on the Earth (and the availability of resources to supply for that demand) exist to establish the human impact on the Earth (Borucke et al., 2012; Goudie, 2013). There are metrics that assess an individual's perception of their environmental impacts such as the New Ecological Paradigm (NEP) scale that measures the environmental concerns of individuals by providing fifteen statements and asking individuals to indicate the strength of their agreement/disagreement with each statement. Responses are then used to develop statistical measures of their environmental views (Anderson, 2012). In contrast, others exist that assess actual environmental impacts of individuals (Cucek et al., 2012). Some studies have found that there is little correlation between these two types of metrics and that often individuals who perceive themselves as having a low environmental impact do not actually have a reduced impact when it is measured by a footprint calculator (Bleys et al., 2018; Kormos &

Gifford, 2014). Some explanations for this include lack of awareness of the environmental impacts of behaviors, social desirability, and limited memory and knowledge for those individuals who self-assess their environmental impacts (Bleys et al., 2018). Therefore, it is important to use an external tool to identify actual behaviors rather than environmental views in order to properly assess ecological footprint changes.

A Closer Look at Ecological Footprints

The term "footprint" refers to a measurement in area-based units (Gossling et al., 2002, Wiedmann & Minx, 2007) and offers a broader measure of environmental impact than other metrics that examine perceptions of environmental impact (Bleys et al., 2018). Specifically, an ecological footprint refers to the amount of biologically productive area that is required by an individual, population, or activity to accommodate for their resource consumption (Global Footprint Network, 2018b; Global Footprint Network, 2018c; Wackernagel & Rees, 1996). The point of calculating an ecological footprint is to determine if consumption is environmentally responsible (Gossling et al., 2002).

Occupant behavior is one of the most important factors that can influence a home's energy consumption, second to technical components such as efficiency of mechanical systems and appliances (Gardner & Stern, 1996; Haas et al., 1998; Santin et al., 2009). Heating is one of the primary contributors to a home's energy consumption in many climates in the United States, and the level of heating use is directly controlled by the occupant (Santin et al., 2009). Level of heating use is one example of how one's behaviors can greatly influence the environmental impact of their home and themselves. Other examples include controlling ventilation rates, setting thermostats, water use practices, turning lights off, and frequency of dishwasher and laundry use (Haas et al., 1998; Linden et al., 2006). In the design and estimating of home

consumption, occupant behavior is often neglected (Haas et al., 1998). However, individuals with their behaviors and lifestyles directly influence their individual environmental impact (Gifford & Nilsson 2014). Some baseline behaviors include recycling and buying second-hand goods, along with others that are more impactful including size of home, location, and level of environmental concern (Bleys et al., 2018).

An ecological footprint calculator is one of the most comprehensive metrics available as it compares all human demands on nature, including food, housing, transportation, goods, and services (Bicknell et al., 1998; Global Footprint Network, 2017, World Wildlife Fund, 2017). Other types of sustainability metrics exist (such as the carbon footprint, water footprint, and the general ecological behavior scale), but the ecological footprint is the overarching metric to calculate the demand of human behaviors on our planet's ecosystem. It includes components of other popular sustainability metrics (Global Footprint Network, 2018b; Wackernagel & Rees, 1996) enabling it to broadly examine human demand on the Earth (Borucke et al., 2012; Cucek et al., 2012; Global Footprint Network, 2010; Kitzes et al., 2007; Moore et al., 2012). For this reason, the ecological footprint calculator has emerged as the world's primary standard for measurement of human demand on land and water areas (Cucek et al., 2012).

An ecological footprint is a measure of the load imposed by a given population on nature. It represents the land area necessary to sustain current levels of resource consumption and waste by a population, activity, or individual (Wackernagel & Rees, 1996; World Wildlife Fund, 2017). An ecological footprint calculator measures the amount of biologically productive land and sea area an individual, group of individuals, or activity needs to provide for their consumption (Global Footprint Network, 2018b; Wackernagel & Rees, 1996). Many ecological calculators

can be found online, and thus are accessible by many. However, not all online calculators comply with rigorous standards set for ecological footprints (Global Footprint Network, 2018c).

Ecological Footprint Calculator Comparison

Seven of the most popular online ecological footprint calculators were identified through the literature and online searches (Table 2.2). The questions and answer choices from each calculator were compiled into one document and compared to determine which calculators were the most comprehensive and covered the largest range of potential impact-producing behaviors and choices made by individuals. Calculators were given a coverage score to determine which ones covered the largest amount of material, which can be found in Table 2.2 and in more detail in Appendix A. The top three most comprehensive calculators were then compared to determine relevance to this research and the research participants (tiny home occupants). Through the researcher's observations of tiny home living (Saxton et al., 2016) and literature on tiny homes, calculator categories that were especially relevant to tiny home living were identified and counted for each calculator. This included items such as the existence of electricity, growing one's own food, size of home, and more. Appendix A also highlights all items that were identified, and Table 2.2 displays the relativity score for the top three most comprehensive calculators.

Table 2.2

Seven Online Ecological Footprint Calculators Compared

Calculator Name	Developer	Coverage Score	Relativity Score
Bioregional Ecological Footprint Calculator	Bioregional	33	12
Center for Sustainable Economy Ecological Footprint Calculator	Center for Sustainable Economy	29	12

Table 2.2 (cont'd)

Calculator Name	Developer	Coverage Score	Relativity Score
Eco Campus Ecological Footprint Calculator	Eco-Schools	18	N/A
Global Footprint Network Ecological Footprint Calculator	Global Footprint Network	29	14
Islandwood Ecological Footprint Calculator	IslandWood	13	N/A
The Nature Conservancy Ecological Footprint Calculator	The Nature Conservancy	17	N/A
World Wildlife Fund Network Ecological Footprint Calculator	WWF-UK	24	N/A

The Global Footprint Network online ecological footprint calculator was identified as the most relevant to the research, and one of the most comprehensive overall. Additionally, the United States data for this calculator received the highest data quality for this score, "3A", meaning that "no component of Ecological Footprint is unreliable or unlikely for any year" (Global Footprint Network, 2019a). As such, this calculator was used in this research to measure tiny home downsizers' ecological footprints, based on its comprehensiveness and relevance to this research as well as its rigorous methodology and reliability of data. Certain words from the Global Footprint Network calculator were slightly altered to fit the study's purpose and provide clarification but did not alter the intent of the questions themselves. These changes were tracked to ensure consistency with the original calculator (Appendix B).

About the Global Footprint Network Ecological Footprint Calculator

The Global Footprint Network online ecological footprint calculator is the most well-known and widely used ecological footprint tool and was developed by both the Global Footprint Network and its 75+ partner organizations (Global Footprint Network, 2010; Kitzes et al., 2007;

Kitzes et al., 2009). The Global Footprint Network was established in 2003. Partners of the Global Footprint Network include many organizations from academia, consulting firms, corporations, governmental organizations, and non-governmental social benefit organizations (Global Footprint Network 2018d). To be a partner of the Global Footprint Network, these organizations must comply with the ecological footprint standards (Kitzes et al., 2007). Additionally, the calculation methods are standardized and use a common set of data that are easily accessible, ensuring their credibility and consistency (Bicknell et al., 1998; Global Footprint Network, 2018e). All steps of an ecological footprint calculation-- including raw data-- are found in the "Working Guidebook to the National Footprint Accounts" (Global Footprint Network, 2018f). Additionally, the researcher obtained a workbook license from the Global Footprint Network to fill any gaps that were not represented in the working guidebook. For instance, if the researcher wanted to understand the import value of a specific food item, like tomatoes, the workbook license provided this information. This helped the researcher understand relative importance of factors based on changing footprints for different answer profiles.

Furthermore, the methodology of the Global Footprint Network ecological footprint calculator is regularly reviewed and improved by two review committees (the Standards Committee and the National Accounts Committee), partners of the Global Footprint Network, and other stakeholders including other national governments (Borucke et al., 2012; Global Footprint Network, 2018e; Kitzes et al., 2007; Kitzes et al., 2009). Borucke et al. (2012) provide a detailed examination of the calculation methodology in their paper titled "Accounting for demand and supply of the Biosphere's regenerative capacity: The National Footprint Accounts' underlying methodology and framework".

Mathis Wackernagel and William Reese were two of the first individuals to systematically calculate an ecological footprint (Bicknell et al., 1998, Global Footprint Network, 2010; Kitzes et al., 2009; Wackernagel & Rees, 1996). Wackernagel, now the President of the Global Footprint Network, has worked towards developing and creating standards for the ecological footprint in order to provide guidelines ensuring their accuracy and transparency. Data sources, scopes, conversion factors, and communication processes are all outlined using the ecological footprint standards (Global Footprint Network, 2018b). Committees consisting of academics, government officials, and professionals review these standards, with the most recent revision developed in 2009 (Global Footprint Network, 2009; Global Footprint Network, 2018c).

To calculate the area required, ecological footprint calculators use yields of land types including cropland, forest, grazing land, fishing ground, and built-up land, and measure this in global hectares (gha) (Global Footprint Network, 2010; Global Footprint Network, 2018c; Kitzes et al., 2007; Moore et al., 2012; Wackernagel & Rees, 1996; Wiedmann & Minx, 2007; Zhao et al., 2005). A global hectare equates to 10,000 square meters or 2.471 acres and is approximately the size of a soccer field (Global Footprint Network, 2018g). To measure in global hectares, the total amount of a resource is divided by the yield per hectare (Global Footprint Network, 2010). Product yields are calculated based on their yearly regeneration rates. Global hectares (gha) are used as a unit of measure because they look at the physical area across various land use types (Borucke et al., 2012).

The ecological footprint provides a metric to compare human demand on the Earth's available resources (Zhao et al., 2005) by dividing results into five consumption categories: food, housing, transportation, goods, and services (Bicknell et al., 1998). Food, housing, transportation, and goods results are dependent on an individual's specific answers to the

calculator's questions. The service category considers activities that are part of the society, including healthcare, government, military, infrastructure, and other public services. Ecological footprint calculators assume that every individual taking the quiz has a certain portion of their country's "services" footprint allocated to them (Global Footprint Network, 2018g). These services do not vary greatly between individuals; rather, they are dependent on an individual's country of residence. Every individual in every country shares a portion of the service footprint that is then adjusted based on responses to related calculator questions (Global Footprint Network, 2018c).

In 2003, the Global Footprint Network established the National Footprint Accounts (NFA) program, which provides a framework for calculating an ecological footprint (Borucke et al., 2012). The NFA annually measure the ecological footprints of countries across the world from 1961 to the present day, with the most recent edition released in 2017 (Borucke et al., 2012). The point of the NFA is to provide a comprehensive and transparent calculation methodology, and these editions are available online as free downloadable files (Global Footprint Network, 2010). To calculate a specific country's ecological footprint, regional data on resource consumption is considered (Global Footprint Network, 2018c). Imports are added and exports are subtracted from the country's overall production (Global Footprint Network, 2018b; Kitzes et al., 2007). The NFA use about 15,000 data points per country per year, and include more than 200 countries, territories, and regions (Global Footprint Network, 2010; Global Footprint Network, 2018c; Kitzes et al., 2009). For each country per year, over 5,400 raw data points are used (Global Footprint Network, 2010). In the 2011 edition, approximately 61 million data points were used in total (Borucke et al., 2012). The data sources for the NFA include United Nations data sets, including the Food and Agriculture Organization, United Nations

Commodity Trade Statistics Database, UN Statistics Division, and the International Energy Agency. Additional data includes peer-reviewed science journals articles and thematic collections (Borucke et al., 2012; Global Footprint Network, 2018b; Kitzes et al., 2007). The NFA is used and supported by more than 70 organizations, making it the most widely used national accounting methodology today (Kitzes et al., 2009).

For reference, the ecological footprint of an average American is 8.4 global hectares (gha), the sixth largest average in the world. Table 2.3 shows the top ten countries with the highest average ecological footprint per person (Global Footprint Network, 2018h).

Table 2.3

Top 10 Ecological Footprints by Country

Country	Average Ecological Footprint (per person)
Qatar	15.7 gha
Luxembourg	12.3 gha
United Arab Emirates	9.8 gha
Mongolia	9.5 gha
Bahrain	8.7 gha
United States of America	8.4 gha
Canada	8 gha
Kuwait	7.6 gha
Denmark	7.1 gha
Estonia	7.0 gha

Ecological Footprint Calculator Critique

The Global Footprint Network online ecological footprint calculator was developed in 2008 and updated in 2017. The personal ecological footprint calculator is based on NFA data for selected countries. The national per person ecological footprint is allocated to five ecological footprint components (food, housing, transportation, goods, and services), and land types (forest, cropland, energy, fish, grazing land) using a country's average consumption profile. The online calculator asks questions that either increase or decrease different components of one's ecological footprint relative to national averages. For example, if a person indicates that they eat twice as much beef as the average American, their "beef" footprint will double, which will be reflected in their overall ecological footprint value. Likewise, someone who indicates they eat very little beef will receive a fraction of the average beef value, which will be reflected in a smaller overall ecological footprint (Global Footprint Network, 2018g).

By design, the purpose of an ecological footprint calculator is to track the amount of biologically productive area it takes to generate the resources that an individual, population, or activity consumes (Global Footprint Network, 2018b). In the most basic terms, an ecological footprint calculator compares an individual's responses with the average person's annual consumption for several items in each of the consumption categories (food, housing, transportation, goods, and services) (Bicknell et al., 1998). The Global Footprint Network's ecological calculator was selected for use in this research for its coverage compared to other calculators, relevance to this research, adherence to ecological footprint standards, regular review and validation by multiple parties, transparency and sharing of data, and its well-known reputation in the field. However, ecological footprint calculators are not designed to address every single behavior relating to footprint changes and therefore do not precisely measure

individual footprints. In fact, Chapter 4 identifies a number of behaviors that were not accurately represented in the ecological footprint calculator, meaning that the footprint calculator may not capture all significant behaviors, such as water conservation. However, for this study, the ecological footprint calculator was used to give us a general idea of how environmental impacts and behaviors are influenced after downsizing to a tiny home, based on a 78-question online survey that will be described in the next chapter. As such, an exploratory study is an appropriate approach to provide a glimpse of how environmental impacts change.

To improve the comprehensiveness of the ecological footprint calculator, starting this year (2019), the Global Footprint Network is launching "The Ecological Footprint Initiative". This is a partnership between the Global Footprint Network and York University in Toronto, Canada (Global Footprint Network, 2019b). The goal of this initiative will be for researchers to further develop the methodology and improve the data behind the current ecological footprint calculator.

Ecological Footprint Implications

There are many implications of an ecological footprint. The future of society depends on the availability of environmental resources it demands (Global Footprint Network, 2010). An ecological footprint is a measure of the demand that human behavior has on the biosphere and can be used to show the connection between human behavior and the impact on the environment (Global Footprint Network, 2010; Kuzyk, 2012). An ecological footprint can also be used to examine resource demand, distribution of natural resources, how to address human resource consumption, and how to educate people on their consumption habits (Borucke et al., 2012; Kuzyk, 2012). Policymakers can use ecological footprints to compare human demand and

available resources and facilitate opportunities for them to develop actions to address demand-based resource scarcity (Global Footprint Network, 2010).

According to the Global Footprint Network, in 1961 humanity's ecological footprint was about half of what the Earth could supply. For the first time in human history, in the early 1970s, humanity's ecological footprint surpassed what the Earth could supply, known as overshoot. In 2008, humanity had a 52% rate of overshoot (Borucke et al., 2012). Typically, an individual's ecological footprint requires multiple Earths to sustain. To reduce our population's ecological footprint to only require one planet, it is imperative that the built environment be designed more efficiently to provide more opportunities to reduce environmentally-taxing behaviors such as individual transportation and energy-intensive diet choices that can have larger relative impacts (Global Footprint Network, 2018c).

Summary

This chapter summarized the literature that is relevant to tiny homes and ecological footprint calculators. There is a lack of academic research in the tiny home field that have explored the relationship between tiny homes and environmental impacts in a measurable way. This is important to understand if tiny homes are a potentially viable sustainable housing solution to lower the environmental impacts of the residential sector. In the ecological footprint section, the researcher reviewed metrics to identify what would best fit the needs of this study, determining that the Global Footprint Network ecological footprint calculator was the most appropriate for assessing the ecological footprints of tiny home downsizers. By exploring these two fields of literature, the researcher gained a strong foundation to understand the complex research issues pertaining to each that were subsequently reflected in this study's research questions and design.

CHAPTER THREE: RESEARCH METHOD

Research Design

This chapter describes the method used by the researcher to conduct the study. It explores the research design, research participants, study instruments, data collection procedures, and methods of data analysis. Research design encompasses the overall strategy that a researcher integrates into a study to address the research questions. Research design inquiries can include qualitative, quantitative, and mixed data (Creswell, 2014). The following figure shows how both qualitative and quantitative data (mixed methods) were employed to answer the research questions (Figure 3.1). This figure is a callout from the research guide presented in Chapter 1.

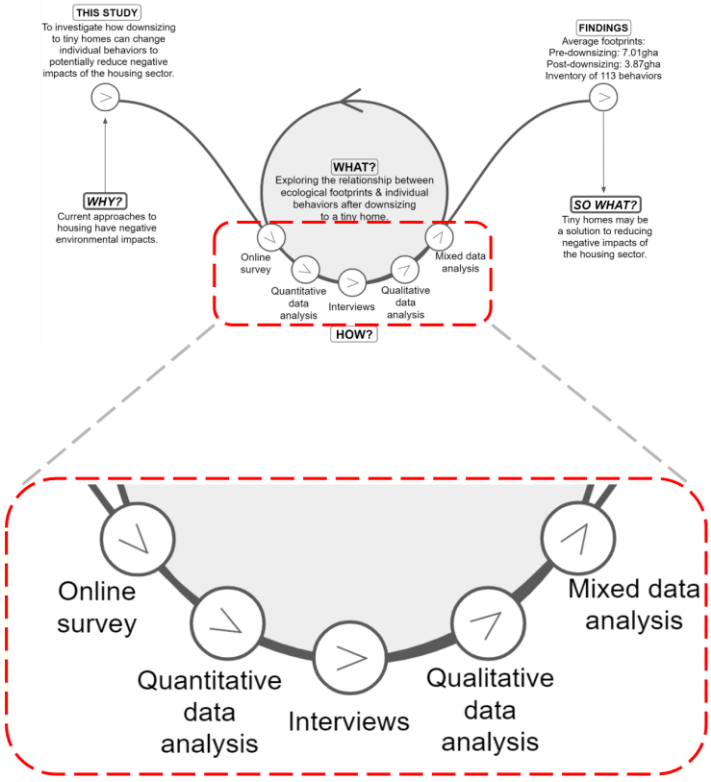

Figure 3.1. Methodology callout for this study.

An exploratory sequential mixed design was used to answer the research questions of this study (Creswell, 2014; Teddie & Tashakkori, 2006). Sequential mixed design research answers

exploratory research questions by employing multiple phases that occur chronologically in a predetermined order. The first phase impacts elements of the second phase, including data collection and analysis and development of questions, and conclusions are based on the results of both phases. For this research, the first phase (online survey) consisted of primarily quantitative data that validated for the first time claims in the literature that downsizing to a tiny home reduced individual environmental impacts. The second phase (interviews) consisted of qualitative data that were used to provide explanations for the findings of Phase One and contribute additional knowledge to the scholarly field (Teddie & Tashakkori, 2006). This approach was considered exploratory because exploratory research helps us to understand and study a phenomenon that has not been clearly identified yet (i.e., downsizing to a tiny home) and helps us to understand it better. Exploratory research also lays the groundwork for future studies.

Qualitative findings in the second phase were used to explore quantitative findings from the first phase. The combination of collecting both quantitative and qualitative data helped to compensate for the drawbacks of each type of data (Creswell, 2014; Merriam, 2002). The mixed methods approach included data analysis from both open- and closed-ended questions to draw conclusions from multiple types of data. To summarize, the researcher used the qualitative data to verify and explain trends observed in the quantitative data.

Research Questions

This method (exploratory sequential mixed design) was used to answer the following research questions that directed this study:

RQ: After downsizing to a tiny home (less than 500 square feet), what is the relationship between changing ecological footprints and individual behaviors?

Sub-Q1: How does the average annual ecological footprint of tiny home downsizers

compare to **a)** their ecological footprints in previous housing, and to **b)** national averages?

Sub-Q2: What components of an individual's ecological footprint are most influenced positively and negatively after downsizing to a tiny home?

Sub-Q3: What behaviors contribute to changes in the ecological footprints of tiny home downsizers?

For this research, tiny homes under 500 square feet were considered (about half the size of an average apartment in the United States-- 982 square feet), which excluded homes that were considerably out of the range of what is considered "tiny" and could be considered a "reduced sized home" (Small House Society, 2014). This research included tiny homes that are both mobile or fixed on a permanent foundation and were stand-alone and land-based. Additionally, only tiny homes that are permanent residences for their occupants were considered. Individuals in this research were required to live in their tiny homes for a year or more at the time of this study and live in the United States.

This study investigated individuals who have downsized to tiny homes along with exploring the relationship between their changing ecological footprints and behaviors. An exploratory sequential mixed design included an online survey consisting primarily of questions from the Global Footprint Network Ecological Footprint calculator (Global Footprint Network, 2018i) to provide quantitative data, and an interview consisting of open-ended questions to provide qualitative explanations for survey findings.

The independent variable for the first phase of this study is an individual's act of downsizing to a tiny home and occupying it for a year or more. The dependent variables for the first phase of this study are an individual's calculated ecological footprint and their behavior

changes as reported after downsizing. For the second phase, the outcome of the first phase (footprint changes) was the independent variable. Table 3.1 indicates the relationship between the research questions, data sources, and data analysis methods. The section numbers refer to the sections within the online survey employed in this research.

Table 3.1

Relationship Between Research Questions, Data Sources, and Data Analysis Methods

Question	Data Sources	Data Analysis
Main Research Question: After downsizing to a tiny home (less than 500 square feet), what is the relationship between changing ecological footprints and individual behaviors?		
Sub-Q1: How does the average annual ecological footprint of tiny home downsizers compare to **a)** their ecological footprints in previous housing, and to **b)** national averages?	Quantitative ● Survey ○ Demographic Information (§ 2) ○ Housing Characteristics (§ 3) ○ Eating Habits (§ 4) ○ Transportation Habits (§ 5) ○ Recycling Habits (§ 6) ○ Purchasing Habits (§ 7) ● Global Footprint Network ecological footprint results	● Descriptive Statistics

Table 3.1 (cont'd)

Question	Data Sources	Data Analysis
Sub-Q2: What components of an individual's ecological footprint are most influenced positively and negatively after downsizing to a tiny home?	Quantitative ● Survey ○ Demographic Information (§ 2) ○ Housing Characteristics (§ 3) ○ Eating Habits (§ 4) ○ Transportation Habits (§ 5) ○ Recycling Habits (§ 6) ○ Purchasing Habits (§ 7)	● Descriptive Statistics
Sub-Q3: What behaviors contribute to changes in the ecological footprints of tiny home downsizers?	Qualitative ● Interview audio recordings	● Corroborative Analysis

Participants

The participants selected for this study were individuals who had moved from one home to another with a square footage of less than half. These individuals also downsized to a tiny home with a square footage of 500 feet or less that is standalone and land-based. These participants currently lived in the United States and had occupied their home for a year or more. The participants for the online survey were reached through a variety of data sources including:

1) The Tiny House Map
2) The Tiny House Magazine

3) Various Facebook group pages (Tiny House Life: 73K members, 10+ posts per day, Tiny House People: 41K members, 10+ posts per day, Tiny House Talk: 31k likes, 10+ posts per day, Tiny Houses and Off-Grid Living: 22K members, 10+ posts per day)
4) Directly through various blogs of tiny home occupants (Appendix C)

Since the tiny home population does not have a comprehensive database for individuals to report characteristics of their homes, these four data sources supplied creative research recruitment strategies that focused on online recruitment. These four data sources provided a sampling frame for the tiny home downsizer population, and many tiny home occupants use these data sources to share their experiences and connect with others. For data sources #1 and #4, tiny home occupants were emailed directly with an invitation to participate in the online survey (Appendix D). Specific blogs were identified that the researcher believed included participants that fit the criteria for this study and that had been active in recent months (Appendix C). These blogs included posts that were dated beginning at least a year from the time of recruitment for this study and shared that individuals had downsized from a larger home. For data source #2, the researcher published articles in issues #68 - 71 of the magazine to explain the study and request participation from magazine subscribers who fit the study criteria. For data source #3, the researcher posted a recruitment flyer and description in the groups listed above (Appendix E). Across all recruitment methods, the researcher provided contact information in the case of questions or comments. In the introduction of the online survey, participants were asked to share what data sources they used to connect with others in the tiny home community. No new data sources outside of those already included in this research arose from this inquiry, which gave the researcher confidence that the four data sources used were effective in reaching a representative sample of as many tiny home downsizers as possible.

There are three principal barriers to estimating the accuracy of a response rate in this study: unknown demographics, regulatory, and technological. From a demographic perspective, because the target population uses many social media platforms, it is difficult to estimate the exact population size of tiny home downsizers in the United States that fits this study's criteria. For example, it has been estimated by certain bloggers that there are a few hundred tiny home households in the United States, many of which have just recently downsized within the past year, although estimates vary. However, there are 73,000 members on a Facebook group called 'Tiny House Life'. One possible explanation for the large discrepancy in numbers is that many of these 73k members may be tiny home advocates, not actual occupants. From a regulatory perspective, many tiny home occupants "fly under the radar" to avoid possible conflicts with code and zoning compliance, making it difficult to fully identify and therefore understand this population. Additionally, the permitted tiny homes often require different building permits than larger homes, making it difficult to track these homes down using actual permit data from local municipalities. From a technological perspective, a Facebook group like 'Tiny House Life' may have 73k members, but very few will see an individual post, considering variables such as privacy settings and levels of activity on Facebook. This is a two-pronged problem; first, not all 73k members would fit the study criteria, and second, there is no way to determine whether a post reached all of them. Moreover, it is highly likely that many of the 73k are members due to interest but are not actually tiny home occupants who meet the study criteria.

For all these reasons, the researcher decided to focus on the completion rate rather than the response rate. Based on a variety of factors including the study criteria, pilot study response rates, the time required to complete the survey, recruitment strategies, and resources available to the researcher, the researcher set a target completion of 75 responses for the online survey. In

total, 92 individuals took the survey, but seven did not fit the study criteria, and their data were eliminated from the dataset. Of the remaining 85 survey responses, five were not complete, leaving 80 complete responses by individuals who fit the study criteria. This provided the researcher with a satisfactory 94% completion rate. By design of the survey instrument, the researcher purposefully incentivized participants to complete the survey. On the survey introduction page, participants were told that their results could be emailed to them after completion of the survey. The introduction also shared the purpose of the online survey and why it was important to participate. Additionally, a progress bar was shown to participants throughout the course of the survey to visually describe how much of the survey was left to complete, showing a design emphasis to achieve a high completion rate.

Following the data analysis of the online survey results, 12 tiny home downsizers were identified and contacted to participate in a phone interview. These participants were purposely selected if they indicated in their survey responses that their behaviors were influenced by downsizing to a tiny home. The survey included five questions that asked if participant's various behaviors were influenced by downsizing to a tiny home. For example, one question asked, "Are your eating behaviors influenced by your choice to live in a tiny home?". Participants could answer "Yes", "No", or "Sometimes". The researcher chose interview participants who answered "Yes" to all five questions to ensure that interviews provided as many examples of behaviors that changed after downsizing as possible. Fifteen participants answered "Yes" to all five questions, but three of these were not contacted because they did not provide their emails for interview requests, leaving 12 individuals.

These 12 individuals were selected because of their self-reported level of association between their behaviors and downsizing to a tiny home for every footprint component. Nine of

these downsizers responded to the interview request, yielding a 75% response rate. Creswell (2002) found that fewer than five participants are sufficient for qualitative research, and as such, the nine interview participants provided a strong sample size.

Description and Validation of Study Instruments

This study used two instruments to collect data from the research participants: a quantitative, online survey and a qualitative interview. The online survey provided demographic and ecological footprint data for 80 tiny home occupants. The interviews provided an inventory of behaviors relating to changes in ecological footprints for nine of the 80 tiny home occupants. The results from the online survey gave an overview of ecological footprint changes and trends of tiny home downsizers across the United States. The interviews provided an in-depth view to explore what types of behaviors were responsible for ecological footprint changes. To answer the research questions, both instruments were analyzed. The next section will describe how the study instruments were developed and validated.

Pilot Study

Pilot studies are commonly conducted to test a study's protocols and identify necessary adjustments while refining the overall research design (Sommer & Sommer, 2002). This process helped the researcher to define the data collection methodology with respect to both the content of the data and the procedures to collect the data.

To ensure that the study instruments were valid and reliable, four distinct steps were taken:

1) An initial pilot study was conducted using two individuals to measure the readability and understanding of the study instruments.

2) A panel of experts reviewed the study instruments and made recommendations for improvement.
3) A pilot study was conducted on a larger sample size of 10 individuals.
4) A panel of experts helped to determine the accuracy of interview codes during data analysis.

The online survey instrument consisted primarily of questions taken directly from the Global Footprint Network ecological footprint online calculator. This calculator was identified and selected for this researched based on a variety of factors described in Chapter 2 under the 'Ecological Footprint Calculator Comparison' section. The researcher obtained a workbook license from the Global Footprint Network to incorporate the Global Footprint Network calculator into this survey and publish the results. Additional questions included in this survey were limited to screening questions to characterize survey participants, based on the factors identified from past studies (Technavio, 2018; The Tiny Life, 2013). The survey also included a few follow-up questions to help identify potential interview participants. Certain words from the Global Footprint Network calculator were slightly altered to fit the study's purpose and provide clarification but did not alter the intent of the questions themselves. These changes were tracked to ensure consistency with the original calculator (Appendix B). The interview instrument contained questions that aimed to infer the relationship between downsizing and one's affected behaviors.

The first version of the online survey protocol and interview questions were first pilot tested on two individuals who fit the study criteria, providing a small sample of the study population. In April 2018, a think-aloud protocol approach was conducted separately with these two individuals to validate the readability and understanding of the study instruments. A think-

aloud protocol approach enables participants to talk about their thought process as they complete a task (Charters, 2003). This research tool ensures that participants interpret the protocol in the way that the researcher intended and that it reads well to someone not familiar with the research. This approach is used before protocols are distributed to a larger sample, making it perfect for a pilot study (Cullum, 1998). Before the instruments were given to the pilot study participants, the researcher asked them to voice any confusion or questions they had while taking the survey and answering the interview questions. If there was a certain question that the participants seemed to be struggling with, the researcher probed them with questions to understand their thought process. This feedback was recorded, and changes were made to the content and format of both the online survey protocol and interview questions (Appendix F). This included additional instructions, correction of terminology, providing examples, and slight reordering of questions. These changes were sent to the individuals for confirmation that they covered all the changes that were discussed, and the online survey protocol was digitally converted into the Qualtrics online survey software format, provided by Virginia Tech.

The updated study instruments were reviewed by a panel of three experts. Jansen and Hak (2005) characterize an expert review as a consultation of fellow researchers to evaluate and provide feedback for research instruments. A minimum of three expert panelists is recommended to provide an adequate review of study instruments (Jansen & Hak, 2005; Presser & Blair, 1994, Theis et al., 2002). Following this approach, the researcher invited three individuals who hold Ph.D. degrees related to this research, have expertise in research methods, and are familiar with the modern tiny house movement. The specific selection criteria for the panel of experts can be found in Appendix G. They examined the readability and format of the online survey and aimed to validate the content and construct of the two study instruments. Panel experts were provided

with instructions, the online survey protocol (through Qualtrics), and a hard copy of the interview questions. They were asked to respond within 14 days of receiving the review packet. Panel experts identified questions that were essential, useful, and irrelevant while making suggestions for additional questions and formatting changes. Consensus among the researcher and panel of experts was made to develop the following revisions to the study instruments:

1) Transfer certain questions from the interview protocol to the survey protocol, leaving seven in-depth interview questions,
2) Remove any unnecessary questions,
3) Separate online survey into sections for easier comprehension,
4) Incorporate formatting changes.

The full spectrum of changes to the study instruments can be found in Appendix H. After these changes were made to the study instruments, the researcher confirmed these changes by calculating the readability level of both instruments. Readability calculators analyze text to determine the ability for the audience to understand a researcher's writing. The Flesch Reading Ease formula is a widely accepted readability formula that is used by many United States Government agencies (Flesch, 1948). This formula was used to establish the readability level of the research instruments, and the survey received a score of 70 (fairly easy to read), and the interview received a score of 60.5 (standard/average). Both instruments have a reading grade level of seventh to eighth grade. This is an acceptable readability level since it should be fairly easy for the average adult to read.

Upon establishing the readability level of the survey instruments and making necessary changes recommended by the panel of experts, the researcher recruited a larger sample size to pilot test the instruments in June of 2018. The researcher posted a recruitment flyer (Appendix E)

in three online Facebook groups and selected 14 interested individuals to participate in the online survey pilot test. Of these 14 individuals, 10 provided complete survey responses, a 71% completion rate. One of the 10 individuals did not fit the study criteria, and their data were eliminated from the data set. Then, five of the remaining nine individuals were purposely selected to be interviewed by phone, following analysis of the survey results. Selection criteria was based on the respondents' answers to questions inquiring about the relationship between their behaviors and experiences living in a tiny home. Respondents who answered "Yes" to all of these questions were chosen to ensure that the interviews provided many examples of behaviors that changed after downsizing.

On average for the pilot study, the online survey took participants 18 minutes to complete, and the phone interviews took 37 minutes. Galesic and Bosnjak (2009) found that 75% of participants who are told a survey will last 10 minutes are willing to take it, and 65% of participants who are told a survey will last 20 minutes are willing to take it. Participants for this pilot study were told that the survey would last 15-20 minutes, which yielded a 71% response rate, falling into the range found by Galesic and Bosnjak.

Lastly, the five interviews were recorded and transcribed, upon verbal permission by each participant. The researcher developed a list of preliminary (a priori) codes upon initial review of the transcripts. Then, the researcher used the same panelists as previously described to help determine the accuracy of codes from the interviews. This step was essential to determine if the researcher's interpretation of interviewee's words were correct. To determine the accuracy of interview codes, an excerpt from one interview (about 10% of the interview) was given to the panelists and they were asked to use the priori codes to analyze the data independently while taking note of additional codes they would deem appropriate. This process was repeated with

new excerpts until the rate of agreement was over 90% between the panelists and the researcher and emergent codes were developed. This gave the researcher confidence that the coding method was reliable and helped to further refine the definition of the codes. A table outlining the rate of agreement process can be found in Appendix I, and the code definitions can be found in Appendix J.

The pilot study helped to establish instrument reliability and provide the researcher with experience using them. The next two sections describe the study instruments in more detail.

Online Survey to Measure Ecological Footprints

A survey was used to provide quantitative data and study a sample of the tiny home downsizer population to identify trends across the entire population (Creswell, 2014; Fowler, 2008; Punch, 2003). A survey is a series of written questions in a structured format to gather information from a wide range of individuals (Sommer & Sommer, 2002; Sue & Ritter, 2007), and a survey sample includes all individuals that are recruited to participate in a survey (Dillman et al., 2009). An online survey allows the ability to distribute to many individuals across the United States in an affordable manner, often produces a faster turnaround and can be more interactive than traditional paper surveys by providing creative response tools (Dillman et al., 2009; Punch, 2003; Sue & Ritter, 2007). The goal of this survey was to collect data to measure an individual's annual ecological footprint before and after downsizing to a tiny home. The following are design criteria that the researcher followed while developing this survey, in addition to guidelines outlined by Dillman et al. (2009):

1) Maintains information in a standard form (Dillman & Bowker, 2001; Sommer & Sommer, 2002)

2) Provides characteristics of individuals and relationships between these characteristics (Gray, 2009; Robson, 2002)
3) Includes some open-ended questions for lengthier responses (Sue & Ritter, 2007)
4) Includes an informed consent portion (Sommer & Sommer, 2002; Sue & Ritter, 2007)
5) Contains standardized, carefully-worded questions (Dillman & Bowker, 2001; Robson, 2002)
6) Is logical, clear, and similar questions are grouped (SmartSurvey, 2018)
7) Is brief to keep participants captivated (Sommer & Sommer, 2002; Sue & Ritter, 2007)
8) Avoids yes/no questions (Sue & Ritter, 2007).

The online survey instrument (Appendix K) consisted of 78 questions of various types in the Qualtrics software format, separated into seven sections. Some questions were open-ended and provided a blank box for participants to answer the question in their own words, and other questions were close-ended and provided a list of answers for participants to choose from. Additionally, some questions followed a partially closed format that included a set of answers and an "other" response which allowed participants to provide their own answer if they did not fit any of the provided responses (Dillman et al., 2009). The online survey blended questions derived directly from the Global Footprint Network ecological footprint calculator and adapted slightly to apply to the study population (52 questions), questions about participant behaviors (12 questions), and screening/demographic data (14 questions). Table 3.2 outlines the survey content, including section, data types, and question types. Section 1 introduced the research and reiterated the requirements to participate. It also emphasized the value of participation, stated who the study was being conducted by, the estimated time required to take the survey, and that all identifying information would be replaced with an ID code during data analysis for

confidentiality purposes. Additionally, it stated that there was no compensation for participation, but participants would have the option to provide their email address in this section if they wished to receive their ecological footprint results after their data were analyzed. Then, participants were asked to sign their names and share how they learned about this research study. Section 2, labeled "Basic Information", collected data to characterize the participants, including age, ethnicity, employment status, professional field, personal income, zip code, reasons for living in a tiny home, mobility and setting of their tiny home, and types of forums they used to connect with others in the tiny home community. Section 3, "Housing Characteristics", took questions directly from the Global Footprint Network calculator and asked both about participant's tiny home features and their previous home's features. This included housing type, building materials, number of occupants, square footage, the existence of electricity, and energy efficiency of each. Sections 4, 5, 6, and 7 all used questions from the Global Footprint Network calculator to inquire about eating, transportation, recycling, and purchasing habits. The last question in each section asked whether each respective category was influenced by downsizing to a tiny home. At the conclusion of the survey, participants were taken to a "thank you" page, thanking them for their time and providing contact information for the researcher in the event of questions or comments.

Table 3.2

Sections/Data Types/Question Types of Online Survey

Section	Data Type(s)	Question Type(s)
1. Introduction	1.1 Name and signature	1.1 Open-ended
	1.2 Email address	1.2 Open-ended
	1.3 Request for results to be sent	1.3 Multiple-choice
	1.4 Where heard about the survey	1.4 Multiple-choice

Table 3.2 (cont'd)

Section	Data Type(s)	Question Type(s)
2. Basic Information	2.1 Age 2.2 Ethnicity 2.3 Employment status 2.4 Previous and current professional field 2.5 Personal income 2.6 Previous and current zip code 2.7 Reasons for downsizing 2.8 Mobility and setting of the tiny home 2.9 Online forums used	2.1 Multiple-choice 2.2 Multiple-choice 2.3 Multiple-choice 2.4 Open-ended 2.5 Multiple-choice 2.6 Open-ended 2.7 Open-ended 2.8 Multiple-choice 2.9 Multiple-choice
3. Housing Characteristics	3.1 Previous and current housing type 3.2 Previous and current structural material of house 3.3 Previous and current occupants in house 3.4 Previous and current square footage of house 3.5 Existence of electricity in previous and current house 3.6 Energy efficiency of previous and current house 3.7 Renewable resources in previous and current house 3.8 Additional details about housing (optional)	3.1 Multiple-choice 3.2 Multiple-choice 3.3 Multiple-choice 3.4 Multiple-choice 3.5 Multiple-choice 3.6 Multiple-choice 3.7 Multiple-choice 3.8 Open-ended
4. Eating Habits	4.1 Frequency of consuming animal-based food products in previous and current house 4.2 Frequency of consuming fresh, unpackaged food products in previous and current house 4.3 Frequency of consuming local food products in previous and current house 4.4 Percent of food products produced them self in previous and current house 4.5 Relationship between eating habits and downsizing 4.6 Additional details about eating habits (optional)	4.1 Multiple-choice 4.2 Visual analog scale 4.3 Visual analog scale 4.4 Visual analog scale 4.5 Multiple-choice 4.6 Open-ended
5. Transportation Habits	5.1 Distance traveled by car, motorcycle, train, and bus in previous and current house 5.2 Annual hours flown in previous and current house 5.3 Fuel economy of car in previous and current house 5.4 Frequency of carpooling in previous and current house 5.5 Relationship between transportation habits and downsizing 5.6 Additional details about transportation habits (optional)	5.1 Visual analog scale 5.2 Multiple-choice 5.3 Multiple-choice 5.4 Multiple-choice 5.5 Multiple-choice 5.6 Open-ended

Table 3.2 (cont'd)

Section	Data Type(s)	Question Type(s)
6. Recycling Habits	6.1 Frequency of paper and plastic recycling in previous and current house 6.2 Trash generation in previous and current house 6.3 Relationship between recycling habits and downsizing 6.4 Additional details about recycling habits (optional)	6.1 Multiple-choice 6.2 Multiple-choice 6.3 Multiple-choice 6.4 Open-ended
7. Purchasing Habits	7.1 Annual purchasing habits in previous and current house 7.2 Frequency of second-hand purchases in previous and current house 7.3 Relationship between purchasing habits and downsizing 7.4 Additional details about purchasing habits (optional)	7.1 Multiple-choice 7.2 Multiple-choice 7.3 Multiple-choice 7.4 Open-ended

Questions in the online survey appeared by section. At the end of each section, participants were able to click "next" to progress to the next section. A progress bar was located at the top of each section to show participants how far along they were in the survey. Participants were also given the option to request their ecological footprint results to be emailed after data analysis, which would require the completion of the survey, incentivizing participants to finish. This enabled the survey to be both analytical for the researcher and educational for the participants. There were also a variety of question types, including multiple-choice, open-ended, and visual analog scale questions to both retain interest and to tailor each question to provide the most efficient answer (Sommer & Sommer, 2002). At the bottom of each page, the Virginia Tech logo and the researcher's name and contact information were provided in case of questions or comments. Additionally, the survey was mobile-friendly, and participants could go back to adjust their answers, if needed, in the process of taking the survey.

Eighty survey participants' data were selected to be included in the survey data set. This data set included demographic information and behavior information related to the five ecological footprint components (food, housing, transportation, goods, and services). This data set also included identifying information that was coded to protect the identity of the study participants.

Survey responses for the 80 participants were compiled into a master Excel file to analyze. Once the survey responses were manually entered into the Global Footprint Network's online ecological footprint calculator, ecological footprint values (including values for the five ecological footprint components) were added to the survey data set. This raw data can be found in Appendix L.

Interview to Identify Behaviors Related to Ecological Footprint Changes

Interviews are used to seek thorough and detailed responses to produce a rich source of data (Sommer & Sommer, 2002). They are especially useful when exploring complex topics, and phone interviews provide a feasible and economical approach. For this research, interview questions were carefully crafted to address survey items that required more attention to understand the behaviors that influence one's ecological footprint after downsizing to a tiny home.

Semi-structured phone interviews were conducted to infer the behaviors that relate to tiny home downsizers' ecological footprints. These interviews followed a specific protocol (Table 3.3) and produced a rich amount of qualitative detail, while also allowing the opportunity for follow-up questions as needed. This approach offered flexibility in the time and attention given to certain aspects of the interview depending on the interviewee's responses. Eight questions were self-generated by the researcher to seek further details from the online survey about the

relationship between changing ecological footprints and influencing behaviors. After reviewing the interview questions with both the two original pilot study participants who participated in the think-aloud approach and the panel of experts, the questions were revised and used in the second pilot study. Appendix M shows how the interview questions changed after the pilot study and then how they were further revised after a review by the researcher's committee.

To address the research questions of this study, the interview questions were developed to closely examine what behaviors were responsible for the change in one's ecological footprint after downsizing to a tiny home. The questions further explored day-to-day sustainable behaviors, environmental consciousness, any negative environmental consequences of downsizing, and perception of environmental impacts. These questions and relevant guidelines can be found in Table 3.3.

Table 3.3

Interview Questions

Question #	Question
1	Has moving to a tiny home influenced the way you make decisions related to your environmental impact?
2	If so, can you walk me through your decision-making process when it comes to environmentally-related behaviors?
3	Please describe your environmentally-related behaviors before downsizing to a tiny home.
4	Please describe your environmentally-related behaviors after downsizing to a tiny home.
5	*<If applicable>* In your online survey, you expressed that your _____*<fill in depending on participant's survey responses: transportation, foods, recycling and/or purchasing>*_____ behaviors are a result of downsizing to a tiny home. How specifically did these behaviors change?

Table 3.3 (cont'd)

Question #	Question
6	Can you think of any current behaviors you have that may negatively influence your environmental impact? If so, what are these behaviors?
7	Will you please compare your current environmental impact to your friends and family who live in conventional types of housing?
8	Is there anything you would like to add about your experiences downsizing to a tiny home that you may think is applicable to this research?

The interview protocol included semi-structured questions that prompted research participants to reflect on their personal behaviors that had changed after living in a tiny home for a year or more. The interviews began with multiple warm-up questions focused on identifying the change in decision-making after downsizing to a tiny home. After the warm-up questions, the participants were asked to recount which behaviors of theirs had changed after downsizing to a tiny home. This was asked in multiple ways and the researcher probed when necessary to ensure that as many behaviors could be identified as possible. The final interview questions asked participants to reflect on their personal environmental impact compared to friends and family.

To gain a full understanding of possible motivations and behaviors, these interviews were recorded upon permission of the participant. The Google Voice application was used to record these interviews, which is described in the data collection section.

The nine transcribed interviews contributed to the data set for this study. Interviews consisted of data that asked about changing behaviors after downsizing to a tiny home. 112 pages of transcribed text from the nine interviews contributed to the interview data set and provided an inventory of 113 behaviors within 27 categories that changed after downsizing to a tiny home.

The process for transcribing and coding the interviews is described later in this chapter. The figure below (Figure 3.2) illustrates what an excerpt from a transcribed interview looked like.

	Question / Response
Researcher:	Please describe your environmentally-related behaviors after downsizing to a tiny home.
P8:	Yeah, so a positive of downsizing is that I don't purchase as many tangible items as previously. There just isn't as much space, so clothing, I'm sure you're familiar with the capsule wardrobe. I follow that principle, all my pieces are mixed and matched; I don't have a ton of clothing, I don't have a ton of pots and pans and like knickknacks, and whatnot. And, you know, furniture and things. There's only so much space in the tiny home, so I only have one chair and all that. And so purchasing, there's definitely a lesson due to living in a tiny house.

Figure 3.2. Excerpt of a transcribed interview.

Data Collection Procedures

Data collection took place between September and December 2018. Participants were directly contacted in addition to individuals who learned of the study through the Tiny House Magazine or Facebook. Figure 3.3 shows the breakdown of how the 80 participants learned about the study. Recruitment material (Appendices I & J) was distributed to the four data sources listed earlier in Chapter 3. Individuals were requested to participate in the online survey which was available early September through November 2018. Recruitment began in September, and reminders were sent to potential participants in October. The sample size of 80 individuals produced the data set for data analysis. Survey results were analysed and combined into a single data set for use in reflective follow-up interviews. Potential interview participants were identified and contacted via email to schedule and conduct phone interviews between November and December 2018. Table 3.4 shows the schedule for data collection procedures.

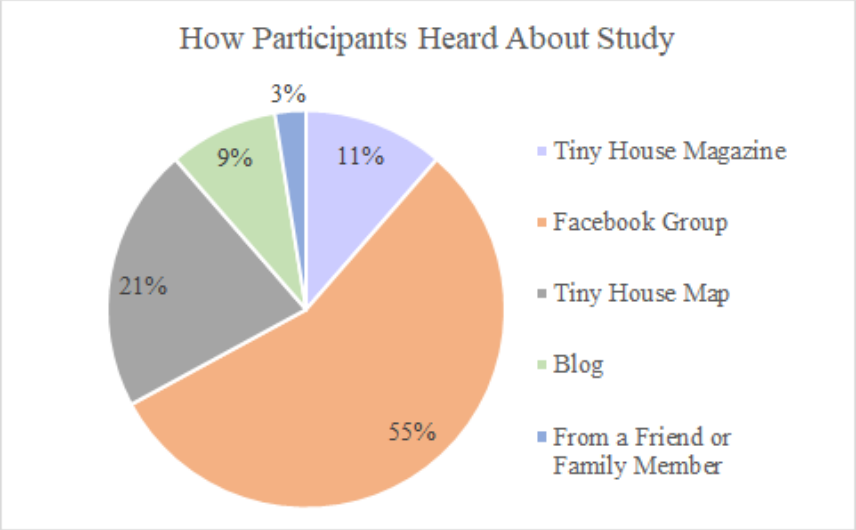

Figure 3.3. How participants heard about study.

This shows how over half of the participants heard of this study through Facebook, showing that this was the most successful recruitment strategy. The Tiny House Map was the next most successful strategy.

Table 3.4

Schedule for Data Collection Procedures

Month	Task Completed
September	Western Institutional Review Board (WIRB) approval obtained
September	Recruitment material distributed
October	Reminder emails sent for survey participation
September - November	Data collected and analyzed from the online survey
November - December	Data collected and analyzed from interviews
December - January	Continued data analysis

After receiving approval to conduct this study from the WIRB in September 2018 (Appendix N), recruitment material (Appendix D & E) was distributed to individuals through four data sources including:

1) The Tiny House Map
2) The Tiny House Magazine
3) Various Facebook group pages
4) Directly through various blogs of tiny home occupants (Appendix C)

The recruitment material provided a brief introduction to the research, the value of participation, who the research was being conducted by (including contact information), and a link to the online survey itself via Qualtrics. A follow-up email was sent to participants contacted directly (data sources #1 and #4) seven days after initial contact to encourage participation. On November 30, 2018, data collection for the online survey was closed. The survey data were then entered into a single data set in Microsoft Excel. Then, the data were manually entered into the Global Footprint Network's ecological footprint online calculator interface (http://www.footprintcalculator.org/) because this interface automatically calculated ecological footprints so that the researcher was not required to do the calculations themself.

The online survey calculated each participant's previous ecological footprint before downsizing and current ecological footprint after living in a tiny home for a year or more, providing a quantitative data set. This dataset also included numerical values for the five ecological footprint components (food, housing, transportation, goods, and services). These data were reviewed multiple times for accuracy before producing final ecological footprint results. Individual results were sent to each survey participant upon request; an example results email is provided in Appendix O.

The next task was selecting interview participants. The researcher had to be sure that the interview participants would be able to provide numerous behaviors that relate to changes in ecological footprints, in order to guarantee a comprehensive inventory of behaviors relating to changing ecological footprints. The objective was to maximize identifying behaviors, therefore, the survey included four questions inquiring whether participant's behaviors were influenced by living in a tiny home. The researcher focused on research participants who answered "yes" to all four questions and this criterion was only met by 12 individuals. Each of these 12 individuals was emailed directly to request participation in a phone interview. Reminder emails were sent out seven days later for participants who had not yet responded. Semi-structured interviews were conducted with nine participants, yielding a 75% response rate. The nine interview participants represented slightly over 10% of the total research participants (11.25% to be exact).

Phone interviews were recorded using the Google Voice application. The researcher always asked permission to record interviews and offered to stop recording upon request. Appendix P provides the script read to participants prior to their interviews. When the researcher began recording, the application notified both the researcher and interview participant that it was recording by stating, "Call is now being recorded". Following this notification, the researcher confirmed that the interview participant heard it. Participants could elaborate on questions as they saw fit and more elaboration led to longer interviews. Phone interview durations ranged between 27 and 54 minutes each. Audio recordings of the interviews were transcribed manually by the researcher in separate Microsoft Word documents to provide qualitative data to be coded. Each hour of recording took approximately three hours to transcribe and review. Recordings were transcribed word-for-word, eliminating indistinct words such as "um" and content that was not related to the interview questions. Participant names were replaced with "P" and the number

associated with their survey response. For instance, the 30th survey participant would be referred to as “P30”. The nine interview participants were renumbered starting from “P1” and ending with “P9” to allow for ease of data reporting. This renumbering process is shown in Appendix Q.

One interview participant responded by email to the interview questions since their circumstances were such that a phone interview was not logistically convenient. Although this approach prohibited the researcher from engaging with the participant and asking follow-up questions, this email response was considered equivalent to a transcript and treated similarly as it provided the same level of detail in describing behaviors and reasons as the phone interview transcripts.

Methods of Data Analysis

The quantitative data for this research consisted of predetermined responses from the online survey and the qualitative data consisted of open-ended interview responses and a handful of open-ended responses from the online survey (#s 3.8, 4.6, 5.6, 6.4, and 7.4 from Table 3.2). In order to answer the research questions for this study, the researcher analyzed the data with both a quantitative and qualitative lens. Then, the data were mixed to determine how qualitative data offered explanations to changes in quantitative data from each participant.

The data analysis methods for this study were reviewed in detail by an expert in the field to determine credibility. The selection criteria for this expert included holding a higher education degree, along with academic or industry experience with data analysis. This field expert holds a Master of Business Administration (MBA) degree and is currently a vice president at Ipsos, a global market research and consulting firm.

Quantitative Analyses

Quantitative data from the survey were analyzed using descriptive statistics to identify trends and distribution of characteristics among participants. This was especially valuable because no one has described the tiny home population so far in as much detail. Data from 80 participants contributed to the quantitative data analysis, and this was used to provide a snapshot of trends among the tiny home downsizer population. This survey data was formatted into a Microsoft Excel file, and ecological footprints were generated by entering the survey data into the Global Footprint Network ecological footprint calculator for each participant's previous footprint and current footprint. The Global Footprint Network's ecological footprint calculator also provided values for ecological footprint components. Ecological footprints and component values were entered into the Excel file. Previous ecological footprints, current ecological footprints, and change in ecological footprints were averaged for the 80 survey participants. These ecological footprints were then compared to the Global Footprint Network national average ecological footprints (Global Footprint Network, 2018h). Descriptive statistics were used to identify the frequency of measured variables to determine frequent responses and general trends and to develop a percentage breakdown for participant characteristics.

Qualitative Analyses

Interview data from nine participants contributed to the qualitative data analysis. The qualitative data were analyzed to create an inventory of behaviors that explained the quantitative findings from the survey. The interviews, lasting an average of 41 minutes, were recorded and transcribed. From these transcripts, the researcher reviewed the data multiple times to become familiar with the data before beginning the data analysis process. This process followed four

steps. The data analysis processes used in the pilot study, which were validated by the expert panel, also followed these steps.

Overview of Coding Process

The researcher extracted the raw data from the transcripts and coded them for conciseness, an example of which can be found in Appendix R. Codes were used to generate labels (or brief phrases) that identify key features of a data set to answer the research questions for a study. Coding of the nine transcripts was completed in the order that the interviews were conducted, in batches of three at a time. Once the transcripts were coded and reviewed by the researcher and panel of experts, the codes were organized into larger categories. Then, the researcher conducted a thematic analysis to organize the codes into overarching themes. An example of this process is shared in Appendix R to show transparency in the coding process. The researcher followed a mix of Braun and Clarke's phases of thematic analysis and the modified van Kaam method described by Moustakas (Braun & Clarke, 2006; Moustakas, 1994). This coding process is described in more detail below.

Four Steps of the Coding Process

Step One: The researcher coded the interview transcripts in four steps to first identify behaviors themselves and then identify reasons behind selected behaviors. The first step involved identifying and highlighting statements in the transcripts that provided specific behaviors that changed after living in a tiny home. After an initial review of data, the researcher built an initial set of codes to identify behaviors. During this stage, two coding methods were adopted: descriptive coding and In-vivo coding. The descriptive coding process was inductive, where codes consisting of short phrases were generated that sought to capture the meaning of a section of data. The researcher assigned preliminary labels to statements in the transcripts that seemed to

share a common focus. For instance, if a participant shared that they "drive fewer miles on a weekly basis to and from work" in their tiny home compared to their previous home, this behavior would be coded as 'driving less'. In-vivo coding, also known as 'literal coding', was used to develop codes from the actual language found in the data. For instance, if a participant shared that they now "drive less", then this behavior also was considered 'driving less', and this language was extracted directly from the interview transcript. This illustrates how both coding methods were used to build an initial set of codes to identify behaviors. Original quotes from the data were conserved in the interview raw data.

Step Two: As the researcher identified sets of common statements across the nine interview transcripts, the researcher moved from codes that were descriptive in nature to categories, which was the second step in the analysis process. For example, an initial code called "statements about how participants intentionally reduced their water use in their homes" was assigned a category called "intentionally reducing water". Since this is a cyclical and iterative process, the initial set of codes and categories were revised multiple times before moving to the second step. As such, the category example "intentionally reducing water" was revised to "water conservation". Revisions of the codes and categories were developed by the researcher. Through this step, 113 behaviors were identified that fell within 27 categories.

Step Three: The third step in the coding process was to organize codes and categories into overarching themes using thematic analysis. The researcher moved from the grounded organization of data to more abstract themes to further understand the data. The researcher decided to identify four themes that aligned with the ecological footprint calculator components from the survey in the first phase of research: housing, food, transportation, and goods/services. The goods and services footprint components were combined because there was much overlap in

the behaviors that contributed to both components. For example, recycling behaviors would be calculated into both components in the ecological footprint calculator. This method was useful to organize the findings in a way that other researchers using the ecological footprint calculator could clearly understand. This ensured that the identified behaviors would be comparable to the values of each ecological footprint component found in the survey data analysis. To illustrate, two categories that emerged from step one in the data analysis were "water conservation," which included statements indicating the changes in water use and an increase of water conservation after downsizing, and "energy usage," which included statements that expressed changes in behaviors related to energy use within tiny homes. These two categories were brought together under the "housing" theme-- one of the ecological footprint components. At this stage, if a behavior had not clearly changed after downsizing to a tiny home and had potentially remained the same behavior as previously prior to downsizing, this behavior was eliminated from the data set. For example, if a participant shared that they conserve water by reducing laundry use but did not explicitly specify that this behavior changed after downsizing, it was not included in the inventory of behaviors since the researcher decided to strictly look at behaviors that changed.

Step Four: The final step included looking for relationships behind the data codes, categories, and themes to understand how these fit together. The researcher used reasons supplied in the interviews to link behaviors to downsizing, then compared those behaviors to the behaviors represented in the ecological footprint calculator that directly related to changes in individual ecological footprints. Additionally, the researcher classified behaviors as being specific to tiny homes or not. To do this, the researcher reexamined the data to identify any reasons that were provided to explain the causes of behaviors. This helped to illustrate why the behaviors changed, rather than simply identifying what the behaviors were. The researcher repeated step one, which

was to highlight statements in the transcripts that led to identification of reasons behind behaviors. Statements in the transcripts were identified that provided reasons behind specific behaviors. Reasons were only identified if the interview participants provided the reason on their own, by following the behavior with a phrase such as “because” or “since”. For instance, if a participant said, “I recycle less since there is little room in my tiny home to store recyclables,” this would indicate a clear reason behind their behavior. Other reasons were identified by the context of the statement. For instance, if a participant said, “living tiny, there’s no dishwasher, so I hand wash everything,” the reason would be spotted by taking into account the overall context of the statement. Although the interview questions were not specifically designed to identify reasons behind changing behaviors, the researcher was able to extract reasons for about half of the 113 behaviors. The reasons were then divided into four categories to identify the relation of the reasons, which emerged thematically: reasons related to physical house, reasons related to the home’s location, reasons related to paradigm shifts in the mindset of the individuals, and reasons related to external factors. The reasons and reason categories were revised multiple times by the researcher, fine-tuning them to ensure they captured the full story. This revision process followed the same refinement steps used when finalizing behavior codes.

Documentation was used throughout the entire data analysis process. Data analysis was recorded via an audit trail to track iterations and organization strategies throughout. The qualitative data from the interviews were used to provide more in-depth explanations for changing behaviors which may not have emerged from the survey. Interview data allowed the researcher to verify the results from the online survey. The interviews were also used to create an inventory of behaviors that influence changing ecological footprints and identify reasons behind these changes.

Mixed Method Data Analysis

The quantitative data from the online survey and the qualitative data from the interviews resulted in a mixed analysis of quantitative and qualitative data. These data were woven together to examine the level of association between tiny home downsizers' changing ecological footprints and behaviors that will be described in this section. To demonstrate the correlation between the quantitative and qualitative data, data from both sources were cross-referenced and relationships were identified. The survey enabled the researcher to identify behaviors captured in the calculator that correlated to downsizing, and the interviews provided information to explain the reasoning behind those behaviors, as well as identify other behaviors not directly addressed in the ecological footprint calculator.

The mixed method data analysis was broken into four parts. The researcher first compared the demographics of the 80 survey participants to the nine interview participants by using descriptive statistics. Ethnicity, gender, age, employment status, and income ranges were all examined to determine if these two groups had similar trends and could be reliably compared (Table 4.17). For instance, the percentage of males represented in the survey and interviews was 23% and 22.2%, respectively. Likewise, the percentage of females was 77% in the survey and 77.8% in the interviews. This example illustrates that the interview group was appropriately representative of the larger survey group.

Next, the researcher plotted the data and visually examined the graphs for patterns that would indicate correlation between participant characteristics and current ecological footprint values from the survey data. Ecological footprints were compared to participant ages, employment statuses, incomes, reasons to downsize, length of time living in tiny homes, mobility and setting of tiny homes, and previous home types. This analysis showed which groups

in this study had the lowest and highest ecological footprint values. To demonstrate, the data showed that those between the ages of 45 and 54 had the lowest ecological footprints, while those between the ages of 18 and 24 had the highest (Table 4.18). In each comparison, the number of participants within each grouping was provided to show that there are some groups that are more represented than others which showed how the study population was spread among these different groups. To follow the previous example, there were seven survey participants between the ages of 45 and 54 and only two participants between the ages of 18 and 24. Although those between 18 and 24 have the lowest footprints, it is important to remember that this age group did not contain as many participants. In Chapter 2, it was shown that no rigorous studies of tiny home occupant demographics exist, and what does exist is relatively conflicting. Therefore, it is difficult to determine if each demographic category had appropriate representation since there is no comprehensive understanding of the existing population.

The next step in the mixed method data analysis was to determine trends among ecological footprint reductions. The researcher broke down the ecological footprint reductions to determine how many participants decreased their footprints by various percentages. For instance, 17 participants reduced their previous footprints by 0-25%. Reductions in home square footages were also explored visually using graphical depictions to see if there was a correlation between extreme degrees of downsizing and substantially smaller ecological footprints.

Lastly, ecological footprint value changes found in the survey were compared to behaviors identified in the interviews. The researcher extracted the ecological footprint component value changes in each of the five footprint categories (food, housing, transportation, goods, and services) for each of the nine interviewees. Component values either had no change, a positive change, or a negative change. These value changes were cross-referenced with behaviors

that each participant identified in their interview. Substantial delta values of over 1.5 global hectares were highlighted and the corresponding behaviors were compiled to show which behaviors potentially caused larger differences in ecological footprints. Then, the researcher compared these behaviors to the ecological footprint survey to determine which behaviors were and were not accurately represented in the survey. This comparison will be described in more detail in Chapter 4.

Summary of the Research Methods

To answer the research questions for this study, the quantitative data from the online survey and the qualitative data from the interviews were examined by the researcher using descriptive statistics, thematic analysis, and mixed method data analysis (Table 3.1). Results from these data analyses are provided in the next chapter.

CHAPTER FOUR: FINDINGS

This chapter presents the findings of data analyses from the online ecological footprint survey and interviews. Analyzing the data correctly required a mixed method approach, including both qualitative and qualitative examination. The online survey primarily provided quantitative data, while the interviews provided qualitative data. Mixing of these data enabled a richer understanding of the relationship between one's ecological footprint and behaviors while living in a tiny home.

This chapter starts by reviewing the analysis methods and assumptions for this study then provides a summary of data from the online survey and interviews. The summarized data from the online survey includes demographic data, housing characteristics, food behaviors, transportation behaviors, recycling behaviors, purchasing behaviors, and ecological footprint data. The summarized data from the phone interviews include housing, food, transportation, goods, and services behaviors. This summary concludes with an overview of reasons behind the aforementioned behaviors. Next, the findings from the mixed data analysis are presented. The chapter concludes by discussing the findings applied to the research question and sub-questions of this study. An infographic of the key study findings, which was developed by the researcher, can be found in Appendix S.

Analysis Methods and Assumptions

Data analysis consists of "examining, categorizing, tabulating, or otherwise recombining the evidence to address the initial propositions of a study" (Yin 1994). This section provides an overview of data analysis methods of which are described in more detail in Chapter 3.

First, the survey answers were compiled into a master Excel file. The demographic survey responses were analyzed using descriptive statistics to help characterize the study

population. Next, ecological footprint values were calculated by entering the following survey answers into the Global Footprint Network online ecological footprint calculator: 3.1-3.7, 4.1-4.4, 5.1-5.4, 6.1-6.2, 7.1-7.2, found in Table 3.2 titled “Sections/Data Types/Question Types of Online Survey" in Chapter 3. Previous ecological footprint values, current footprint values, and footprint component values were compared, and ecological footprint differences were explored in detail.

For the interviews, a coding approach was used to analyze the data. A code is an abbreviation of a segment of words, most often a sentence or paragraph of transcribed text. Codes serve as organizing devices that allow a researcher to quickly identify segments of transcribed text that relate to each other and categorize them. The codes developed in this data analysis derived from the research questions, key concepts, and important themes. This strategy proved very helpful for analyzing interview data to answer the third research sub-question that addresses what behaviors influence changes in the ecological footprints of tiny home downsizers. For instance, the researcher found that solar use, handwashing dishes, and repurposing household items were behaviors mentioned throughout the interviews that had the potential to contribute to a smaller ecological footprint. Responses were assigned a code that correlated with ecological footprint components.

The researcher chose to separate the coding information from the body of the data to assist with identification and analysis. The researcher highlighted sections of the transcribed interviews and copied these sections into a table with the associated code and participant’s code. The researcher initially organized the codes into overarching themes that followed the ecological footprint components: food, transportation, housing, goods, and services. The data fell naturally into these themes. Then, categories were developed under each footprint component. Once the

task of transcribing interviews was complete, the rest consisted of coding and sorting the data according to the category schemes that the researcher developed.

Summary of Data

Survey

This section presents a detailed summary of the 80 online survey responses. This summary is divided into six sections: demographic data, housing characteristics data, food behaviors data, transportation behaviors data, recycling behaviors data, and purchasing behaviors data. Due to the extensive amount of data collected, only summarized data is presented in this section, rather than all components of the raw data. The survey protocol can be found in Appendix K and the raw data set can be found in Appendix L.

Demographic Data

Survey participants consisted of 80 tiny home occupants who live in the United States, have lived in their tiny home for a year or more, and who live in a tiny home less than 500 square feet. In total, 87 tiny home occupants completed the survey, and 80 met the study parameters and were included in this analysis. These survey participants had reduced the square footage of their prior housing by at least half. All survey respondents answered survey questions on behalf of themselves and their individual behaviors.

Throughout this section, certain demographic findings are compared to findings from The Tiny Life survey from 2013, which is the only known survey to date that characterized the tiny home population. However, this source does not share how many individuals participated in this survey, making it difficult to determine its representation of the population.

The findings from this particular study, which included 80 participants, is the seemingly largest-scale examination of the tiny home population, suggesting that this is the most representative of the population. Table 4.1 shows the general demographic characteristics of the study population.

Table 4.1

Demographic Characteristics (n=80)

	Demographic Characteristics	n	%
Ethnicity	American Indian or Alaska Native	1	1.25%
	Black or African American	1	1.25%
	Hispanic, Latino, or Spanish Heritage	2	2.5%
	Mixed	1	1.25%
	Native Hawaiian or Other Pacific Islander	1	1.25%
	White	74	92.5%
Gender	Male	18	23%
	Female	62	77%

Table 4.1 (cont'd)

Demographic Characteristics		n	%
Age	18-24	2	2%
	25-34	24	30%
	35-44	16	20%
	45-54	7	9%
	55-64	26	33%
	65-74	5	6%

The population for this study primarily consisted of Caucasian (92.5%) females (77%). The Tiny Life, who characterized the tiny home population in 2013, found that women comprise just over half of this particular population (55%). Meanwhile, this study's findings suggests that women are actually more represented in this population than men.

Those between the ages of 55 and 64 years old were the most represented (33% of the population). This is consistent with the findings from The Tiny Life's survey that found that 38% of tiny home occupants are over 50 years of age (The Tiny Life, 2013). In contrast, Technavio found that "most" tiny home occupants are over 50 years of age (Technavio, 2018). The term 'most' typically means over 50%, which is inconsistent with the findings from this study.

In regard to ethnicity, respondents' were asked to "choose one or more from the following racial groups" which was followed by a list of six ethnic groups accompanied by a single open-ended response option marked "other" (Appendix K). Ethnicity of the tiny home population has not been notably characterized before this study.

Employment Status and Income: Figures 4.1 and 4.2 visually represent the study respondents' employment statuses and individual annual incomes. For employment statuses, participants were allowed to choose multiple answers if relevant.

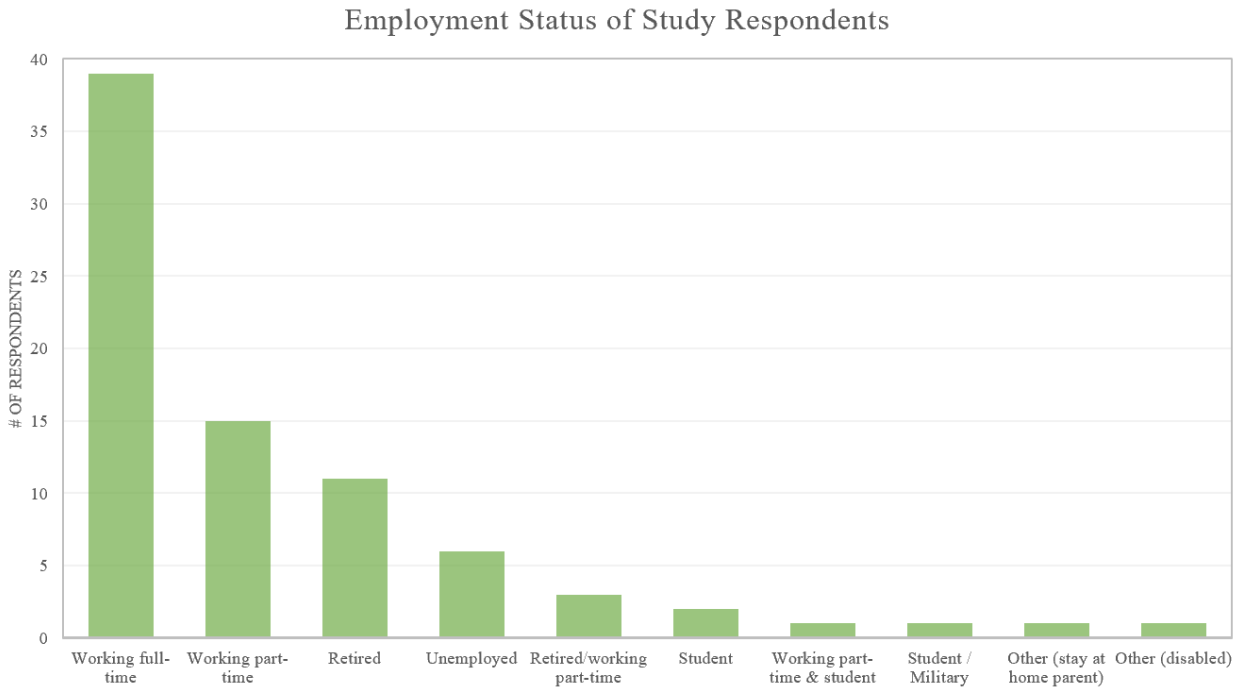

Figure 4.1. Study respondents' employment status.

The largest group (almost 50%) worked full-time at the time of this study. About one third of respondents either worked part-time or were retired.

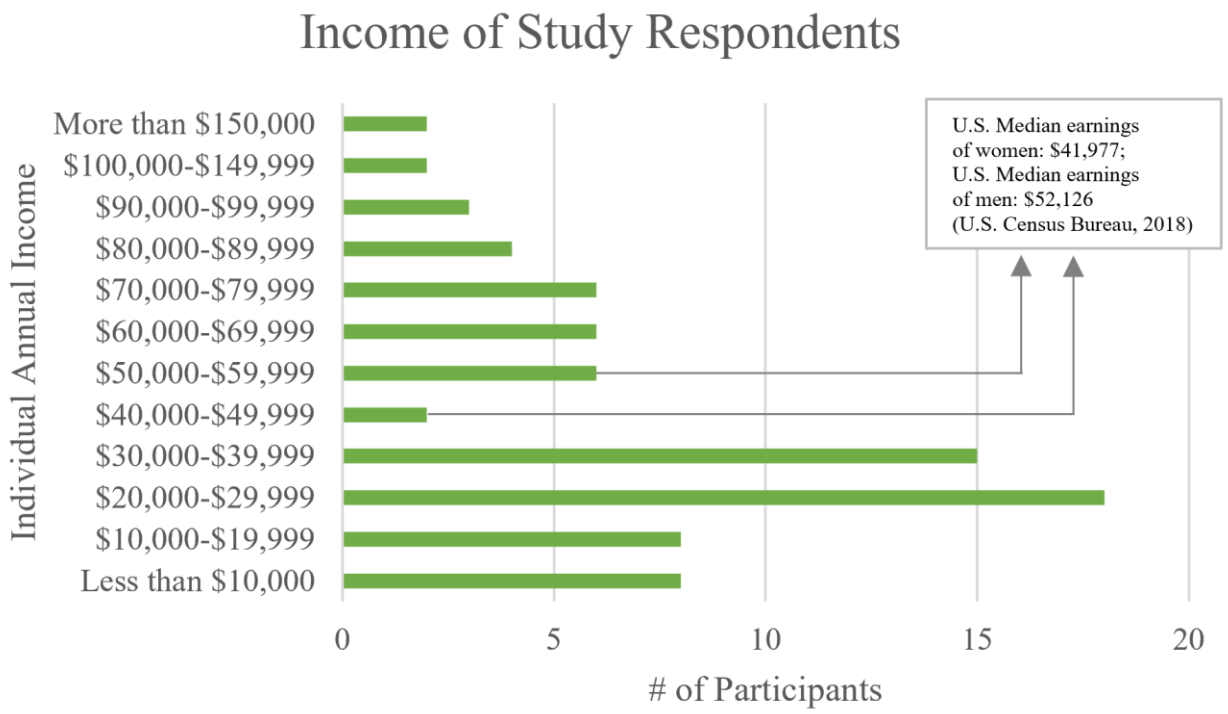

Figure 4.2. Study respondents' individual incomes.

Every income range was represented by two or more study participants. The most common annual income (23% of participants) was between $20,000 and $29,999 per year, which is considerably lower than the median earnings of men ($52,146) and women ($41,977) (United States Census Bureau, 2018). This was followed by $30,000 and $39,000 per year, which comprised 19% of the study population. The Tiny Life found that the average annual income was $42,038, which is closer to the national average (The Tiny Life, 2013).

Location: Figures 4.3 and 4.4 show the locations of the study respondents and which areas of the United States were the most represented with this data. The large orange dots and dark purple areas indicate the most densely represented areas.

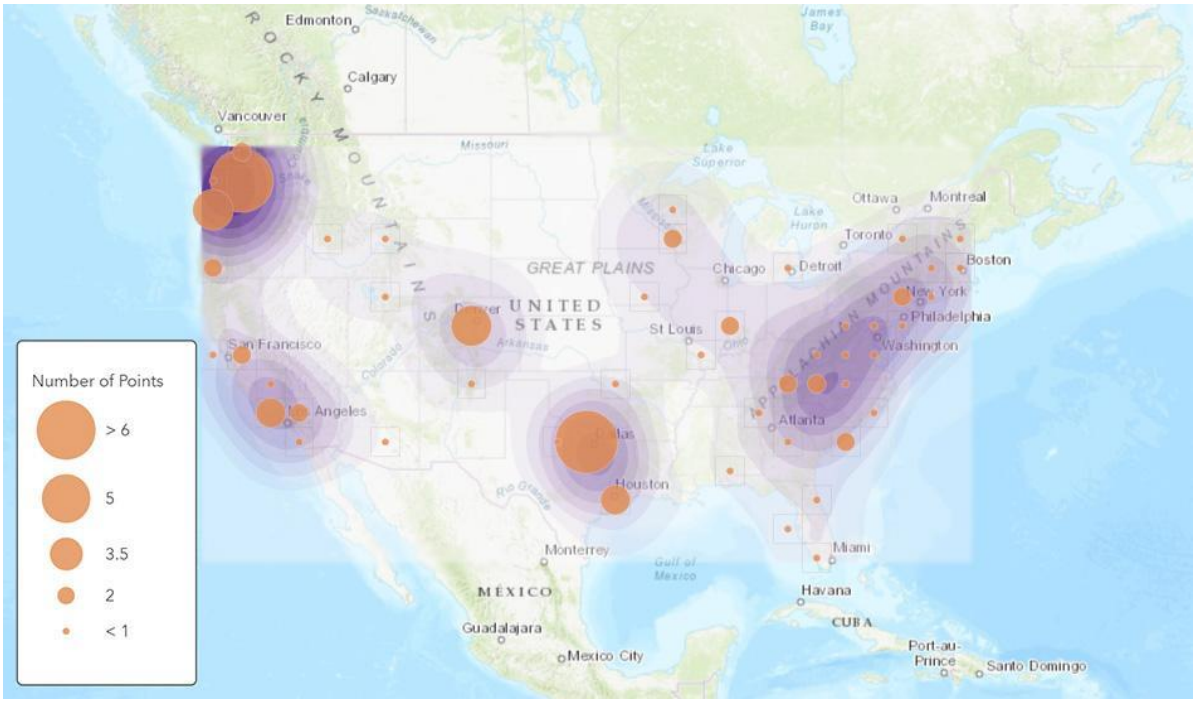

Figure 4.3. Study respondents' locations in previous housing.

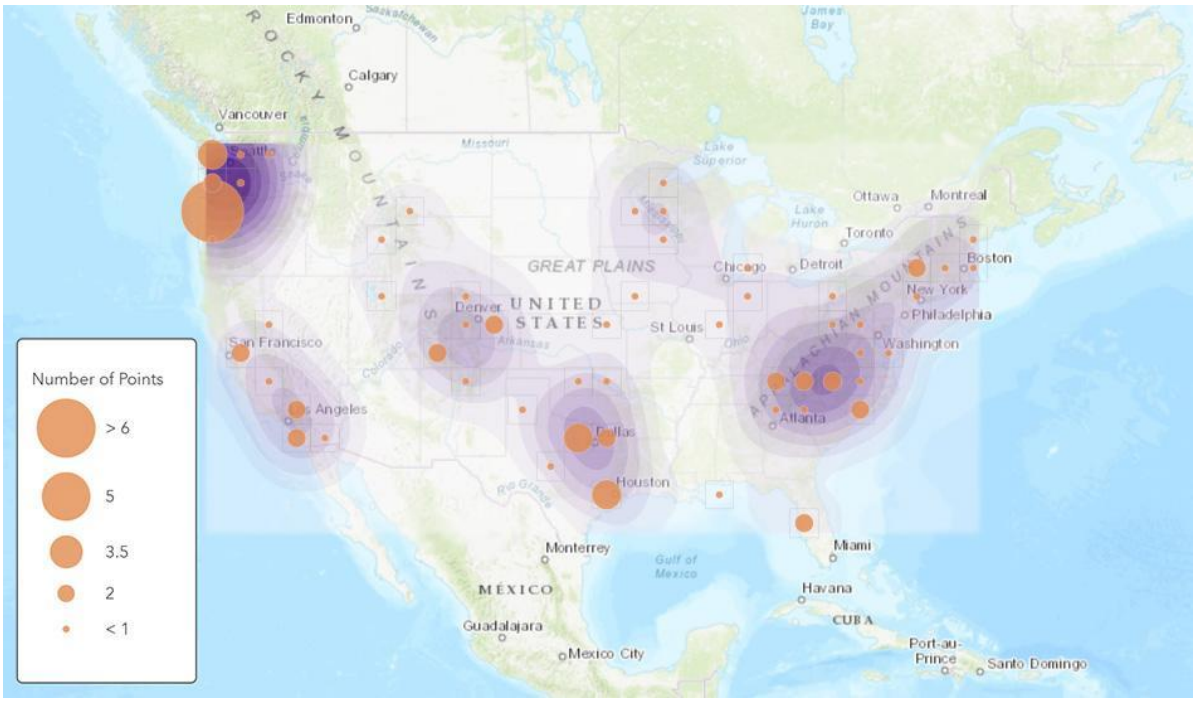

Figure 4.4. Study respondents' locations in tiny home.

These maps show that similar regions of the United States were represented pre- and post-downsizing; however, the locations of tiny home occupants were slightly more dispersed.

Figures 4.3 and 4.4 show a similar distribution as the Tiny House Map that was used to recruit study participants, where individuals self-report the location of their current or planned tiny homes, supporting the conclusion that the study sample represents the larger population. The largest number of participants (nine) were from Texas, followed by Washington, Oregon, and California (eight each). Appendix T displays a table of the represented states in this study while living in a tiny home, while Appendix L shows both previous and current states. The original survey asked participants to share their respective zip codes, but for identity protection, all zip codes were converted to states. However, it is interesting to note that 13 participants moved within the same zip code, while 56 moved within the same state.

Figure 4.5 displays the breakdown of setting by respondents' age range to show which ages were most commonly found in each setting type. The percentages on top of each stacked bar show the percentage of the study population represented within each age group.

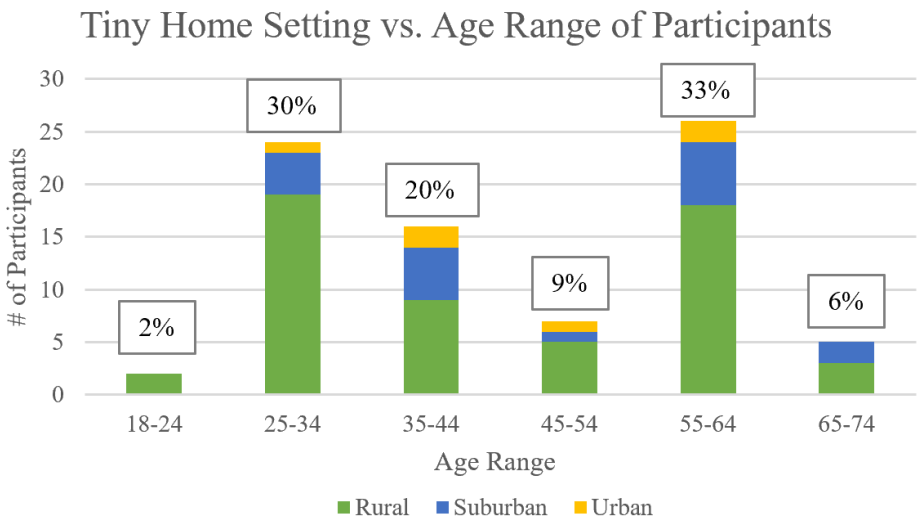

Figure 4.5. Current setting type versus age range of respondents.

The survey showed that most study respondents (70%) live in a rural setting. Of the remaining respondents, 7.5% live an urban setting while 22.5% live in a suburban setting. Settings of tiny home occupants have not been clearly identified in past studies.

Reasons for Downsizing: Lastly, the 80 study participants were asked to share their top reasons for downsizing to a tiny home. This question was worded so that participants could provide as many reasons as they deemed appropriate and were asked to list reasons in order of importance. There was no limit on length, and some participants provided one answer while others shared multiple reasons. Reasons to downsize ranged from a single phrase to a list to a paragraph. Coding of reasons to downsize followed the four steps of the qualitative data analysis described in Chapter 3. The table below (Table 4.2) shows the reasons that were shared by the participants in this study.

Table 4.2

Reasons to Downsize to Tiny Homes

Reason to Downsize (ordered by # of respondents)	# of Respondents	%
Financial reasons	55	69%
Was seeking simplification, minimalism, and/or to reduce material possessions	32	40%
Environmental reasons	29	36%
Wanted mobility and/or ability to travel more	28	35%
Was seeking change in lifestyle	15	19%
Wanted to minimize housing upkeep	13	16%
Was experiencing or planning change in career	9	11%
Was seeking independence/ freedom	9	11%
Found the idea of a tiny home appealing	9	11%
Wanted to build own home	9	11%
Wanted to own a home	7	9%
Wanted to be closer to family	5	6%
Other	17	21%

The top four reasons by number of respondents mentioning them were financial reasons, an urge for a simpler life, environmental reasons, and the ability to be mobile/travel more. These top four reasons are identical to Mutter's (2013) top four reasons derived from 11 interviews. Reasons marked as "other" were ones that were only mentioned one time by a single individual, such as a recent divorce or health reasons. The complete set of reasons can be found within the survey raw data in Appendix L.

Housing Characteristics Data

About 43% of tiny homes represented in this study were mobile, about 43% were semi-mobile, and 14% were permanent. Mobile tiny homes are those that were designed to move relatively often. Semi-mobile tiny homes are those that are built on a trailer and can be transported, but only when necessary. Permanent tiny homes are those that are permanent structures often on foundations and cannot move. The majority of the study participants lived in a rural setting in a freestanding (commonly known as detached) house with running water. While the length of times occupants had lived in their tiny homes varied greatly, the average length of time spent living in a tiny home was two years, 10 months. The shortest length of time was 12 months and the longest length of time was 13 years. The study design deliberately did not include those having lived for less than a year in their tiny home, so the size and characteristics of that population were not investigated. Most tiny homes had one occupant, while most previous homes had two occupants. The distribution of housing types is illustrated in Figure 4.6. These housing types were provided by the Global Footprint Network calculator and were used to ensure consistency with their ecological footprint calculators, but may not be collectively exhaustive.

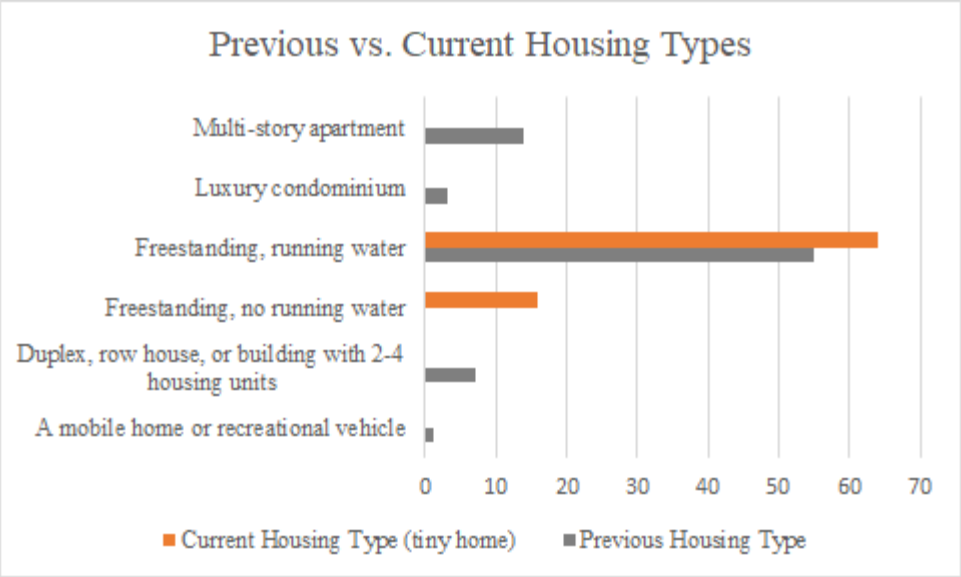

Figure 4.6. Study participant's current housing type vs. previous housing type.

Tiny homes were either freestanding homes with running water or freestanding homes without running water. Previous housing was dispersed among five housing types. Most study participants (93%) expressed that their tiny homes were structurally built with wood. In terms of square footage for tiny homes, the smallest tiny home was 84 square feet, the largest was 500 square feet, and the average tiny home size was 233 square feet. The average previous square footage before downsizing was 1,620 square feet. Figure 4.7 shows the differences in square footages between previous and current square footages, in order of smallest to largest previous

home sizes.

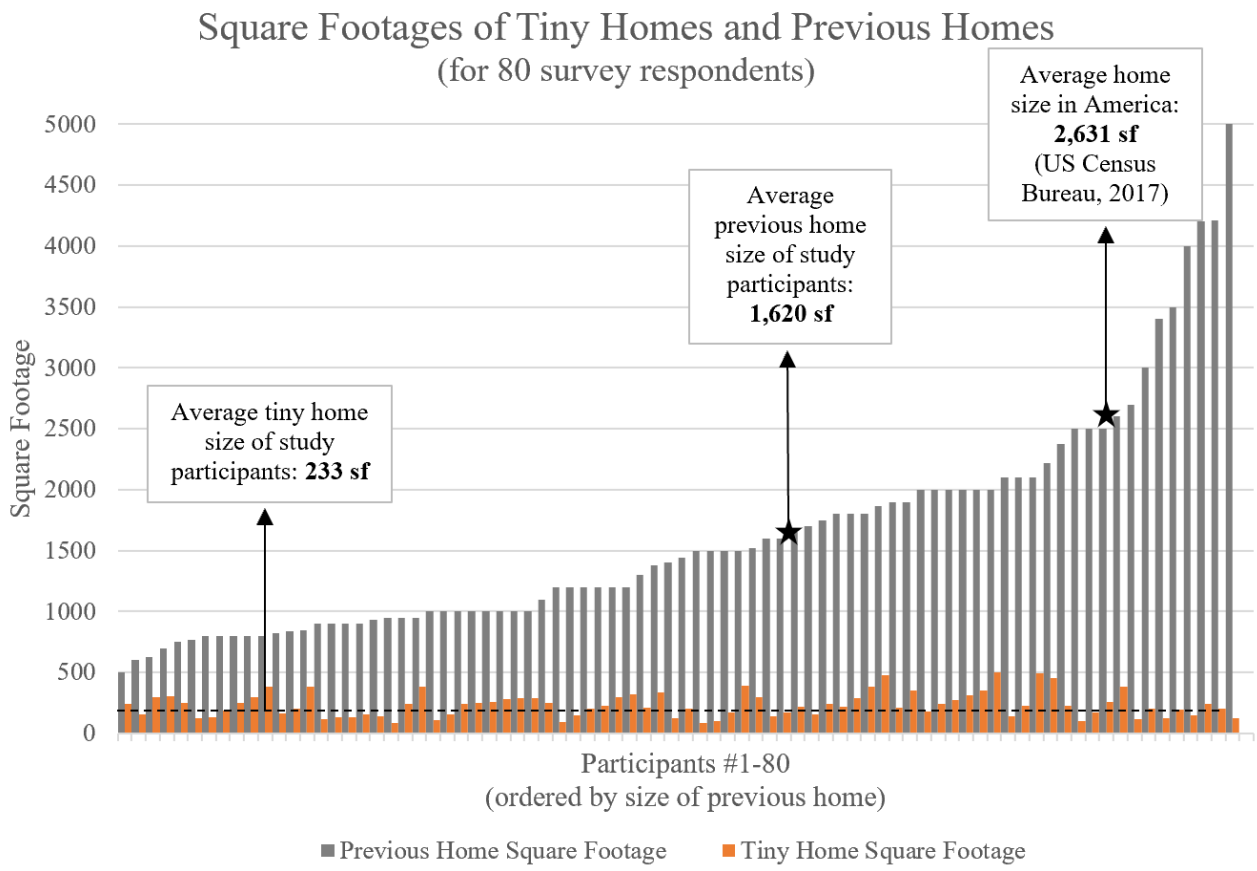

Figure 4.7. Study participant's current housing square footage vs. previous square footage (ordered by square footage of previous house).

Figure 4.7 shows how the square footage of previous homes varied greatly. Figure 4.8, below, displays the same information ordered by square footages of tiny homes.

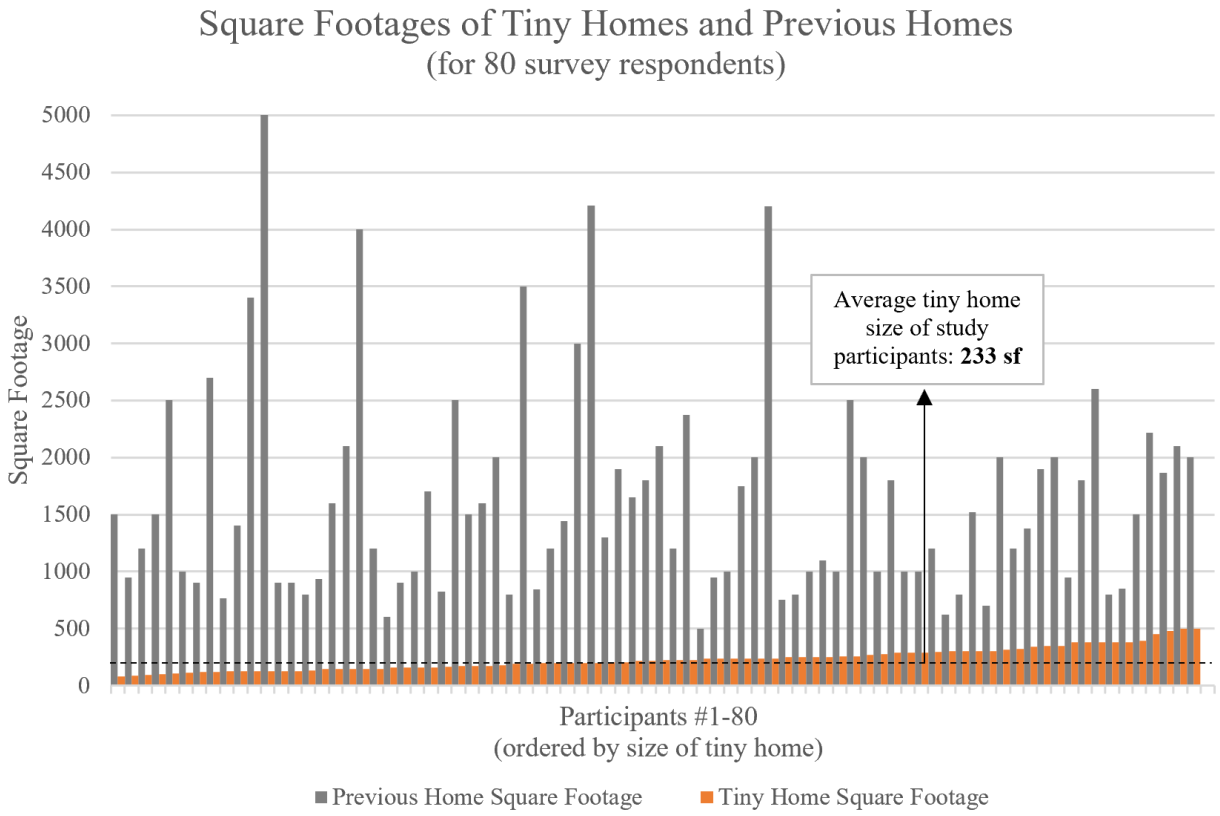

Figure 4.8. Study participant's current housing square footage vs. previous square footage (ordered by square footage of tiny home).

Figure 4.8 shows that there was no apparent relationship between the size of one's tiny home and one's previous home. This means that one's previous home size does not accurately predict their current tiny home size. Changes in square footages will be discussed in more detail later in this chapter.

The energy source of tiny homes and previous homes was also explored. This question was asked the following way: "What percentage of your tiny home's electricity comes from renewable resources?". Across the 80 study participants, the average percentage of renewable vs. non-renewable energy sources in tiny homes was 37%, while the average in previous homes was

2%. This shows a drastic increase in the use of renewable energy as a power source in tiny homes. The study participants also shared how they perceived the energy efficiency of their tiny home and previous home (Figure 4.9).

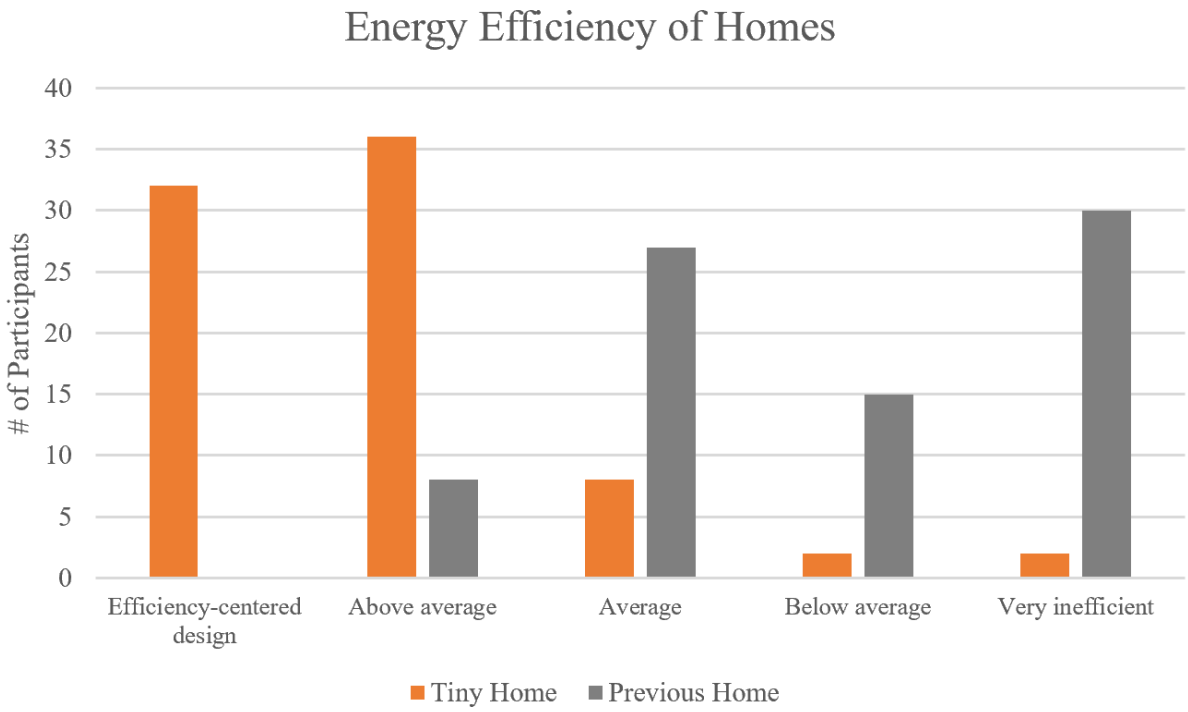

Figure 4.9. Perceived energy efficiency of homes.

Figure 4.9 shows that more tiny homes are designed and built to be more energy efficient than traditional homes. The majority of tiny homes (85%) were perceived to have "efficiency-centered design" or were "above average" in terms of energy efficiency. Likewise, most previous homes (90%) were perceived to be between "average" and "very inefficient" in terms of energy efficiency. No previous homes were considered to have "efficiency-centered design".

Food Behaviors Data

The survey measured the frequency of eating energy-intensive animal-based products, including beef/lamb, pork, poultry, fish/shellfish, and eggs/cheese/dairy. The frequency of eating these animal products was divided into five frequency categories, including: never, infrequently,

occasionally, often, and very often. The survey also measured the frequency of consuming fresh, unpackaged, local, and self-produced foods (Table 3.2). In terms of food behaviors, it was found that all measured food categories were reduced while living in a tiny home. Each frequency category was assigned a numerical value, as seen in the key in Figure 4.10, then averaged across the 80 study participants. If a numerical value was between two whole numbers, such as 2.85, this meant that the averaged response was between "occasionally" and "often" but was closer to "often".

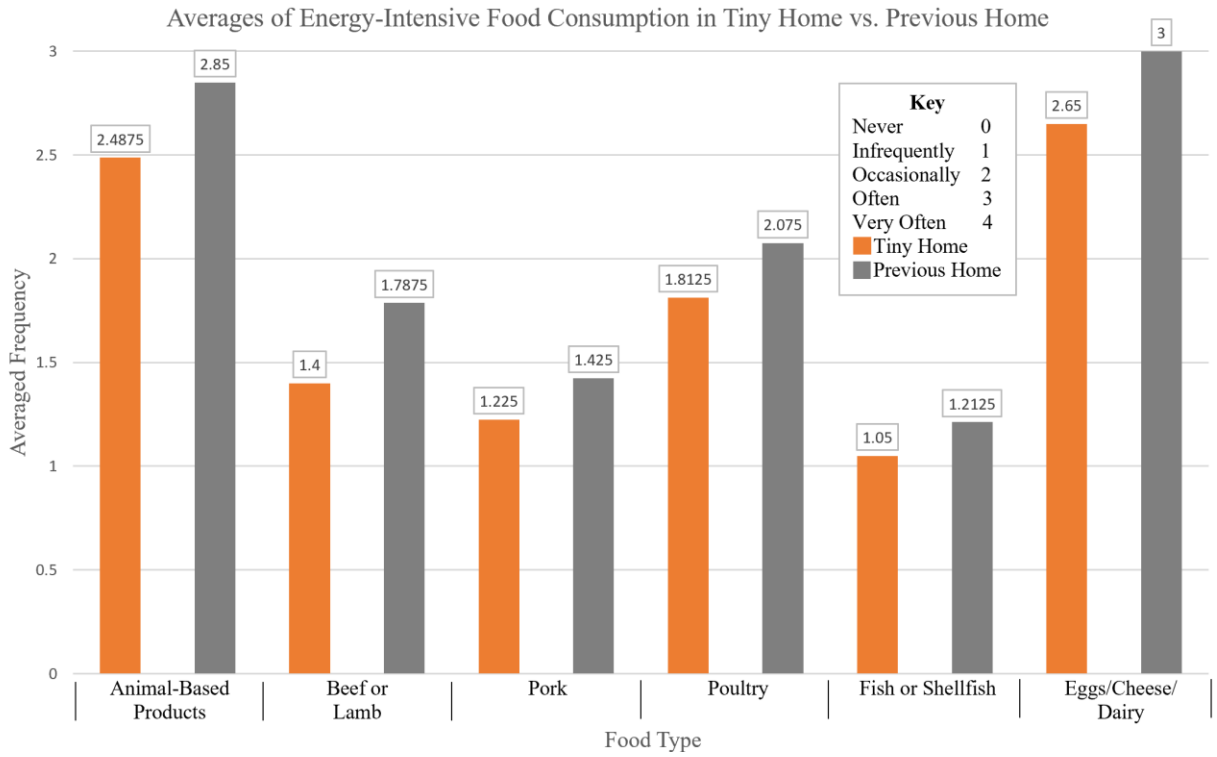

Figure 4.10. Averages of Energy-Intensive Food Consumption in Tiny Home vs. Previous Home.

An ecological footprint calculator assesses animal-based products in particular to determine how many energy-intensive resources one's diet requires. Consumption of less animal-based products means a smaller resulting ecological footprint in the food component. These survey questions were based directly on the Global Footprint Network's calculator. Figure

4.10 shows that across all food categories measured in the online survey, the values were lower for participants while living in their current tiny home compared to their previous housing.

The survey also measured the percentage of foods that were fresh and unpackaged, locally grown or produced, and produced by the individual themselves in a given participant's diet. For each of these three categories, there was a measurable increase: a 9.48% increase in the consumption of self-produced foods, a 13.78% increase in the consumption of locally grown or produced foods, and a 12.32% increase in the consumption of fresh, unpackaged foods.

Transportation Behaviors Data

The next ecological footprint component that was measured was transportation. This component considers weekly travel distances on a variety of motorized transportation options, hours flown each year, the fuel economy of participant's cars, and frequency of carpooling. It was found that the average distances traveled by car, motorcycle, train, and bus were lowered

after moving into a tiny home (Figure 4.11).

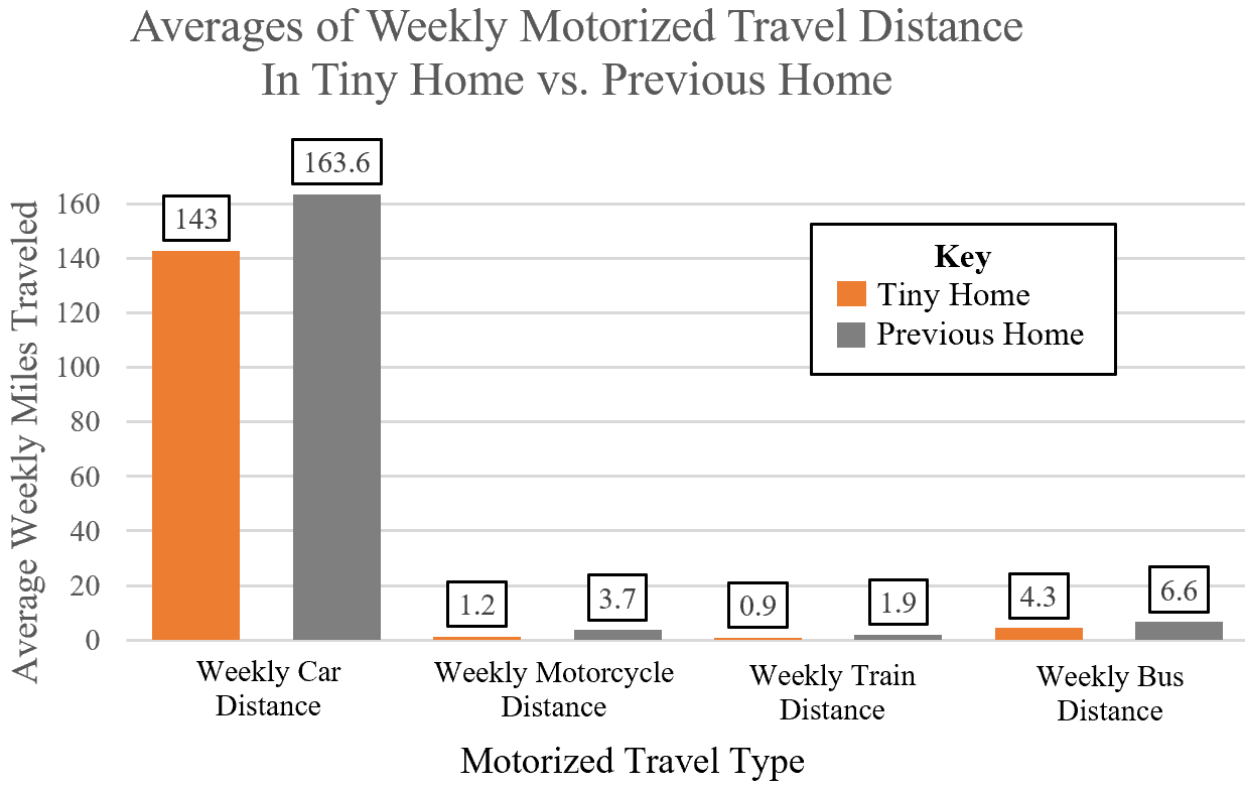

Figure 4.11. Weekly travel distances.

Figure 4.11 shows that on average, weekly distance traveled by car was reduced by about 20 miles after downsizing. Hours flown each year were also decreased on average after downsizing to a tiny home; the average number of hours flown per year while living in a tiny home was 17 hours, while the average number of hours flown was 30 hours in previous housing.

The average fuel economies of cars owned was also slightly influenced. The average fuel economy of a participant's car while living in a tiny home was 28.85 miles per gallon, compared to 26.59 miles per gallon for cars owned while living in prior housing. It was also found that individuals who live in tiny homes are more likely to carpool.

Recycling Behaviors Data

The next section of the survey measured the recycling behaviors of the study participants. Participants were asked how much of their paper and plastic products are recycled, ranging from "little to none" to "all". Figures 4.12 and 4.13 shows the differences in both paper and plastic recycling frequencies between living in a tiny home and living in prior housing.

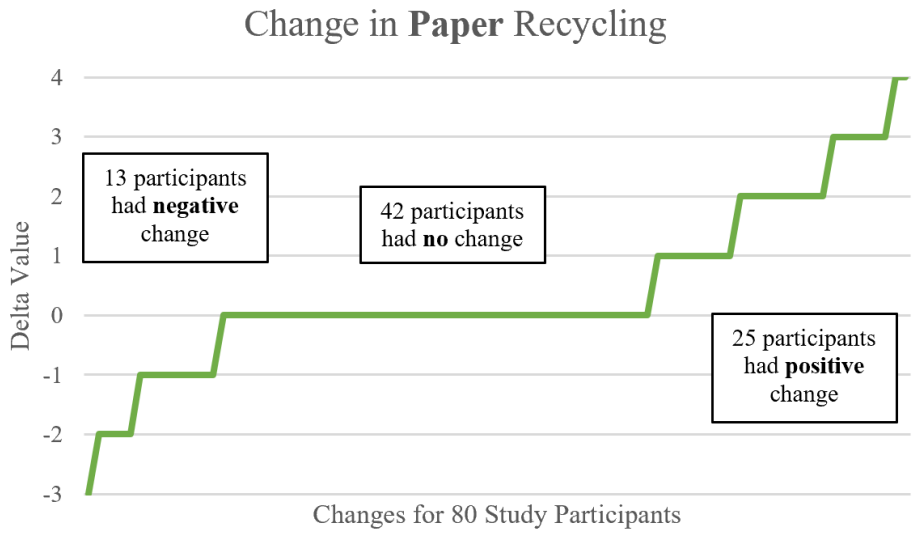

Figure 4.12. Changes in Paper Recycling Frequencies.

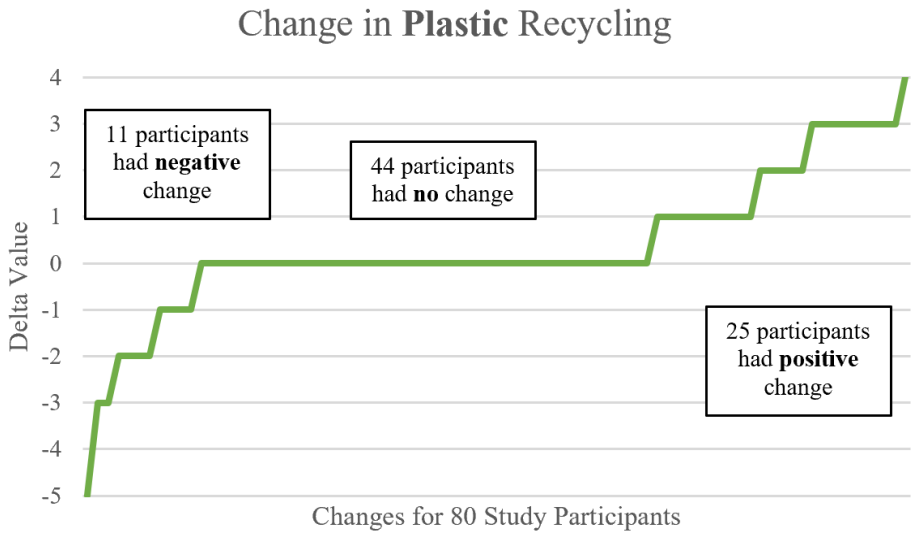

Figure 4.13. Changes in Plastic Recycling Frequencies.

While there are some instances of reduced recycling after downsizing (13 instances for paper recycling and 11 instances for plastic recycling), for the most part, recycling frequencies either stayed the same or increased after downsizing to a tiny home. Based on the results of this study, the number of individuals who are likely to recycle all their plastic and recycling products increased by approximately 15% after downsizing to a tiny home. It is important to note that the researcher did not attempt to control for either market/policy changes such as the market impacts of China's new policies at the time of this study, or changes in location and subsequent availability of recycling facilities. Both of these could have potentially impacted recycling rates of the study participants. Table 4.3 displays the frequency of trash generation in previous homes compared to tiny homes.

Table 4.3

Trash Generation in Previous Homes vs. Tiny Homes (n=80)

	Previous Home		Tiny Home	
Trash Generation	n	%	n	%
Much Less	14	18%	56	70%
Less	18	23%	16	20%
About the Same	43	54%	8	10%
More	3	4%	0	0%
Much More	2	3%	0	0%

The majority of study participants generated “much less” trash compared to their neighbors while living in their tiny home, and no study participants generated “more” or “much more” trash than their neighbors (Table 4.3). In contrast, while in previous housing, the majority of study participants generated “about the same” amount of trash compared to their neighbors. The term “neighbors” comes from the original Global Footprint Network footprint calculator.

Purchasing Behaviors Data

The survey also examined how purchasing behaviors changed after downsizing to a tiny home. The survey asked questions to measure the frequency of purchasing household products, clothing, appliances, electronics, and books ranging from “minimal to none” to “a lot”. Figures 4.14 - 4.18 show the change in specific purchasing behaviors over a particular period of time.

Tables 4.4 - 4.8 display the metrics used to measure purchasing frequencies. These metrics were developed by the Global Footprint Network ecological footprint calculator.

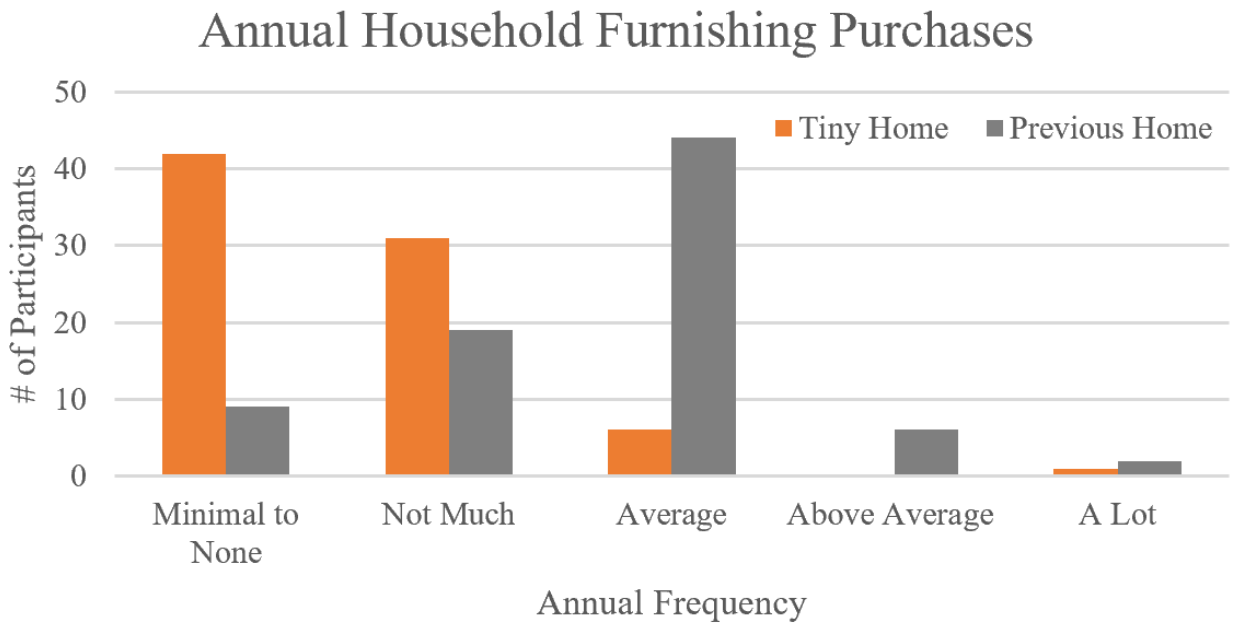

Figure 4.14. Annual household purchasing behaviors.

Table 4.4

Annual Household Furnishings Frequency Key

Response	Example
Minimal to None	No example provided.
Not Much	"I haven't decorated in years, maybe just new towels and sheets"
Average	"New bedding and a lamp or table, just to spruce things up"
Above Average	"A couch or new bedroom set - I like to change it up"
A Lot	"I completely refurnish my living room, it's an annual ritual"

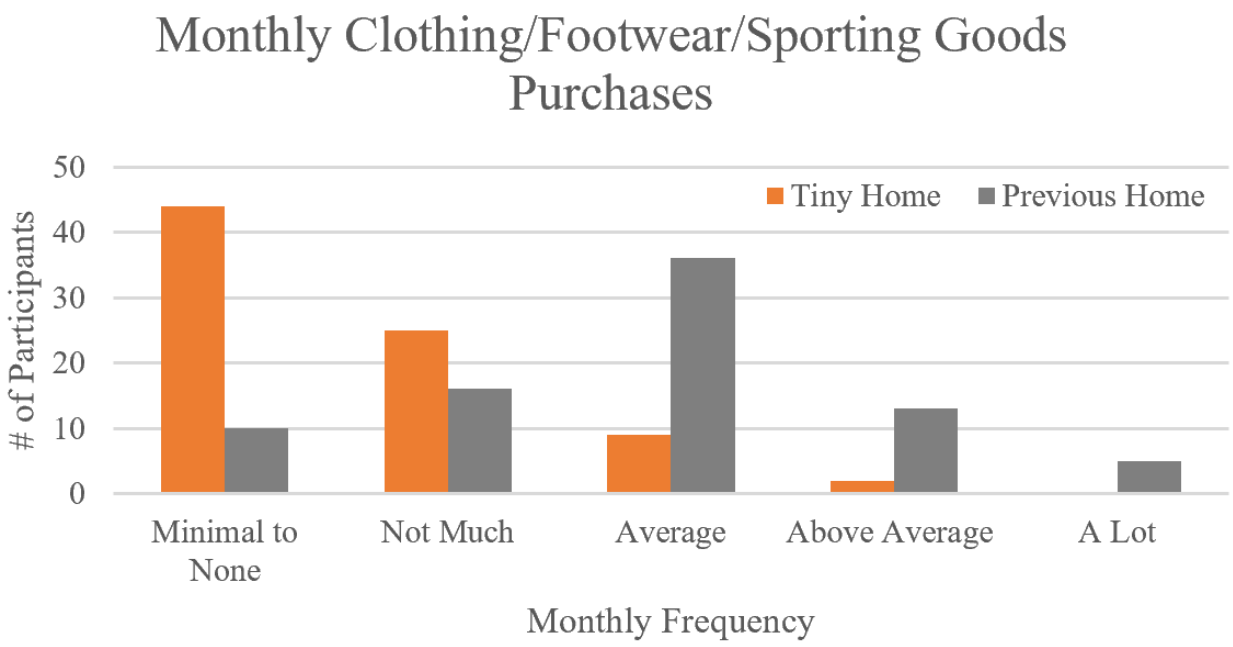

Figure 4.15. Monthly clothing, footwear, and sporting goods purchasing behaviors.

Table 4.5

Monthly Clothing, Footwear, and Sporting Goods Frequency Key

Response	Example
Minimal to None	No example provided.
Not Much	"Underwear and socks"
Average	"Shirts, underwear, socks"
Above Average	"Shoes, pants, shirts, underwear, socks"
A Lot	"Several new outfits and shoes every month"

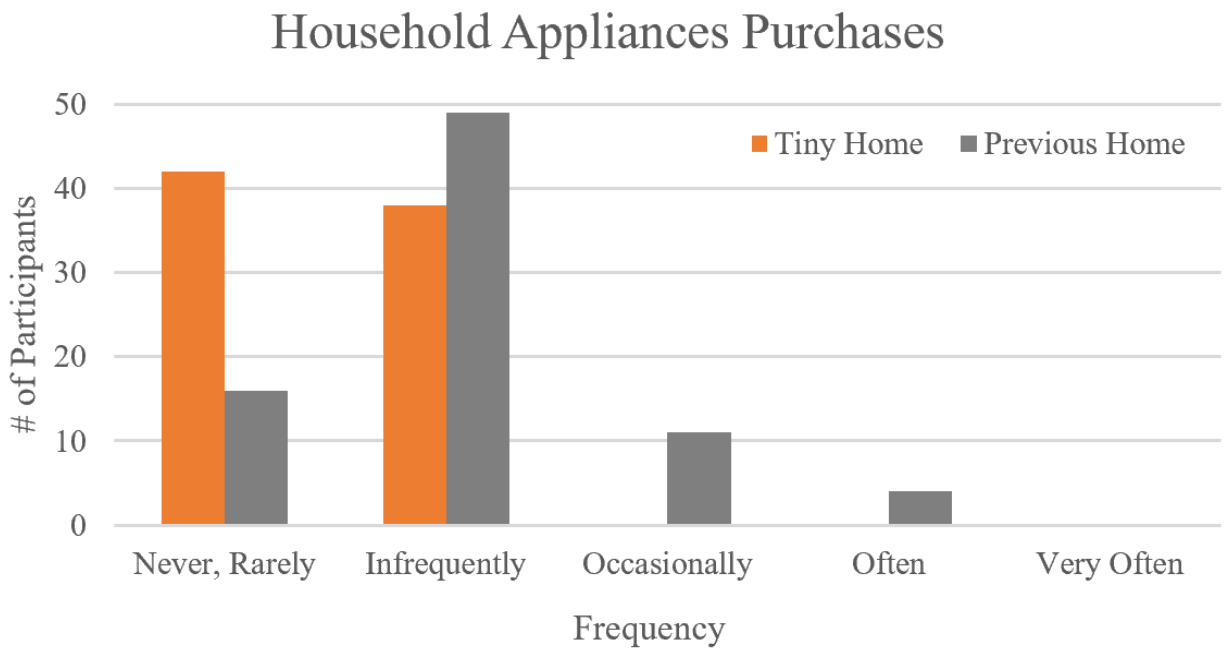

Figure 4.16. Household appliance purchasing behaviors.

Table 4.6

Household Appliances Frequency Key

Response	Example
Never, Rarely	"I don't purchase major appliances for my home"
Infrequently	"I only replace broken appliances as needed"
Occasionally	"I sometimes replace out-of-date appliances with new models"
Often	"I replace most of my appliances with the latest models"
Very Often	"I always have the latest and greatest appliances"

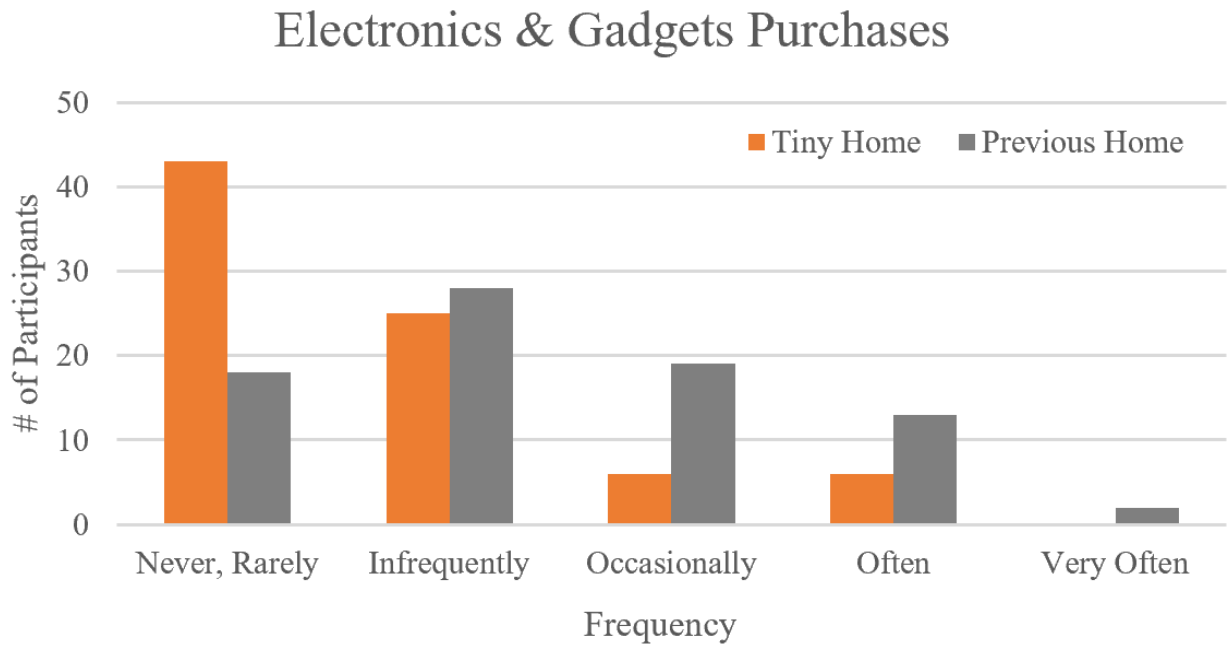

Figure 4.17. Household electronic and gadgets purchasing behaviors.

Table 4.7

Household Electronics and Gadgets Frequency Key

Response	Example
Never, Rarely	"I upgrade my mobile phone every few years"
Infrequently	"I generally only replace broken TVs, computers"
Occasionally	"I replace out-of-date models and occasionally buy a new gadget"
Often	"I own many of the newest gadgets on the market"
Very Often	"I always have the latest and greatest gadgets"

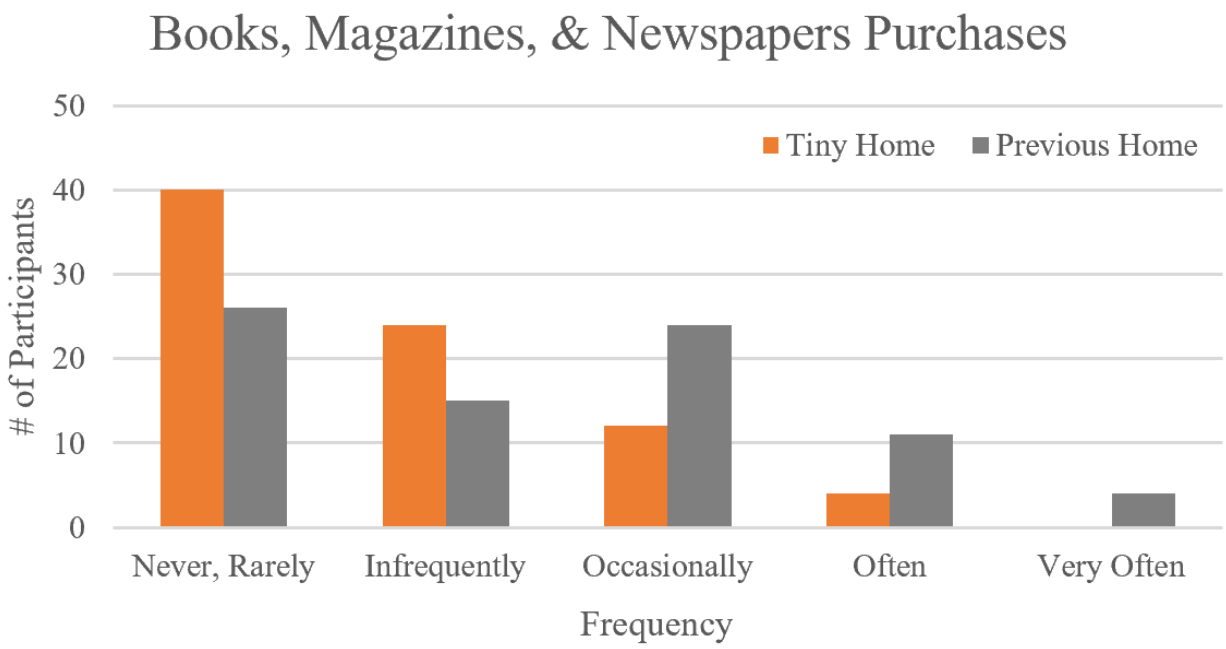

Figure 4.18. Household book, magazine, and newspaper purchasing behaviors.

Table 4.8

Household Book, Magazine, and Newspaper Frequency Key

Response	Example
Never, Rarely	"I buy a newspaper, magazine, or new book a few times a year"
Infrequently	"I read most of the news online and borrow many of the books and magazines I read"
Occasionally	"I read some news online and subscribe to a couple of magazines or newspapers"
Often	"I often get a newspaper and buy books or magazines every week or two"
Very Often	"I get a daily newspaper and buy books or magazines several times a week"

Across all five categories, the purchasing frequency of the 80 study participants were decreased. In many cases, the decrease was by a substantial amount. For instance, over 50% of

participants classified their monthly household appliance purchases as ‘never, rarely’ after moving to a tiny home. In contrast, just over 10% of participants shared that the same purchases were minimal or nonexistent while in previous housing. Overall, there were very few participants who expressed that any of their purchasing habits fell in the “above average/often” or “a lot/very often” categories while living in a tiny home. For each purchasing category, the majority of tiny home downsizers classified their purchasing frequencies as ‘minimal/none’.

Ecological Footprint Data

Current and Previous Ecological Footprint Comparisons: Once the survey data from above was entered into the online Global Footprint Network ecological footprint calculator, the researcher was able to compare the current ecological footprints of the 80 study participants to their previous footprints, to each other, and to the average American’s (Table 4.9). The entered survey answers were the following, found in Table 3.2 titled “Sections/Data Types/Question Types of Online Survey" in Chapter 3: 3.1-3.7, 4.1-4.4, 5.1-5.4, 6.1-6.2, 7.1-7.2. Appendix U is an example of the results generated by the Global Footprint Network calculator.

The average previous ecological footprint was ~7.0 global hectares (equivalent to 4.1 Earths) and the average current footprint was ~3.9 global hectares (equivalent to 2.3 Earths). The average change in ecological footprint from prior housing to tiny homes was ~ -3.1 global hectares (equivalent to the savings of 1.8 Earths). It should be noted that participants were instructed to compare their behaviors for the most recent year of tiny home living to the behaviors they recalled for a typical year living in their previous home. As such, the average current footprint of ~3.9 global hectares was for past year of living in a tiny home.

To review, a global hectare equates to 10,000 square meters or 2.471 acres and is approximately the size of a soccer field (Global Footprint Network, 2018g). If someone has an

ecological footprint of 3 gha, it means that their lifestyle would require about 3 soccer fields worth of biologically productive area to generate the resources that they currently consume. If one's Earth value is 5, this means that about five Earths would be required to provide enough resources to accommodate these behaviors if everyone on the planet had similar behaviors.

Table 4.9

Average Ecological Footprint Values

	Exact Value	Rounded Value	Earth Value
Ecological footprint in prior housing	7.01250 gha	7.0 gha	4.1 Earths
Ecological footprint in current tiny home	3.87375 gha	3.9 gha	2.3 Earths
Change in ecological footprint	3.13875 gha	-3.1 gha	1.8 Earths

Figure 4.19 shows the changes in footprints for all the study participants in order of smallest to largest previous footprint, showing how all 80 participants had a smaller "current" ecological footprint after living in a tiny home for a year or more.

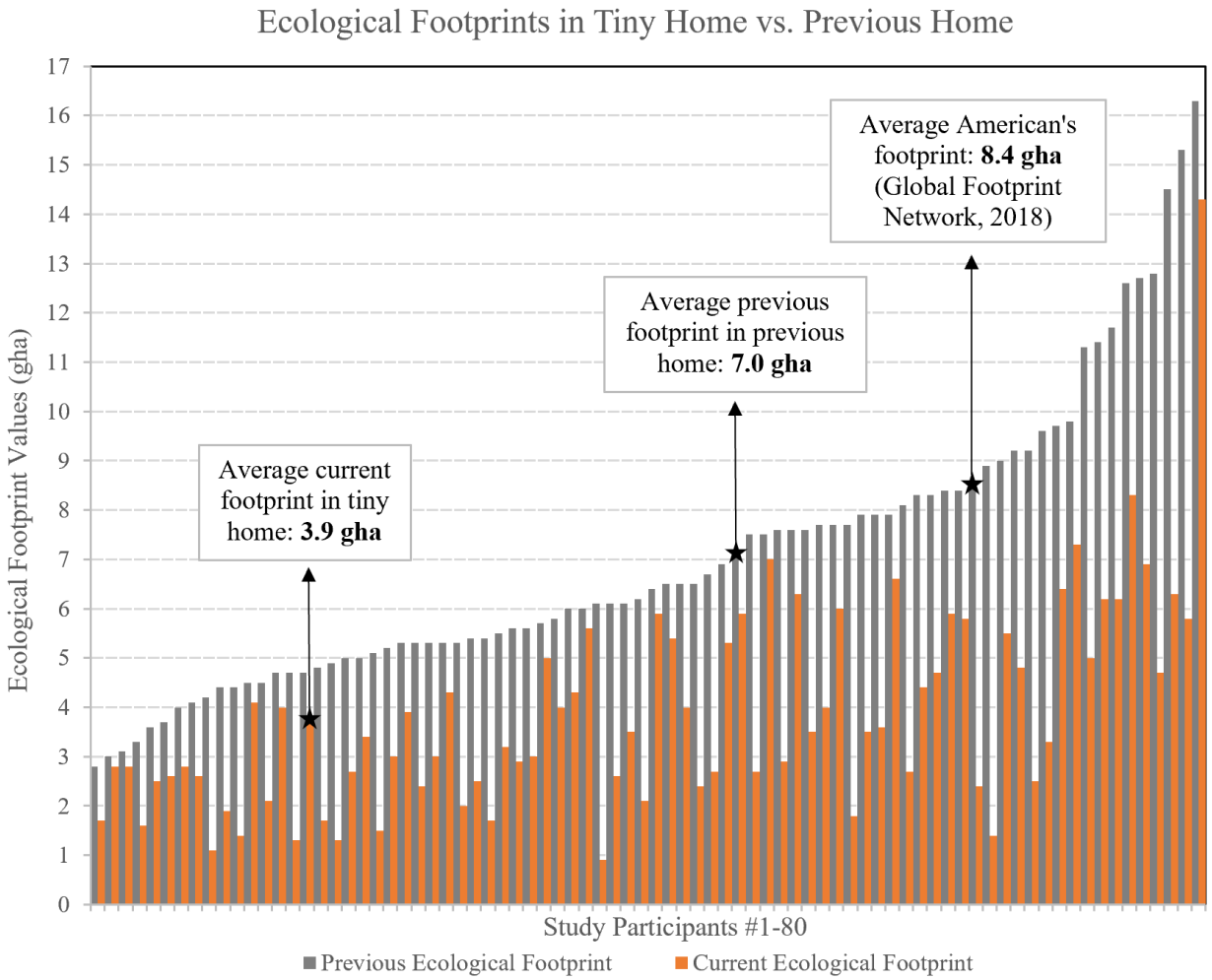

Figure 4.19. Ecological Footprints in Tiny Home vs. Previous Home.

Across all 80 study participants, every single participant experienced a smaller ecological footprint after downsizing to a tiny home. Some changes in ecological footprints were minor while some were drastic. This data showed that downsizing to a tiny home positively impacts an individual's ecological footprint.

Table 4.10 below displays the mean, median, mode, minimum, maximum, range, and standard deviation of both current and previous ecological footprints across the 80 study participants. These descriptors represent specific characteristics of the footprint values.

Table 4.10

Current and Previous Ecological Footprint Values

	Current Ecological Footprint Values (gha)	Previous Ecological Footprint Values (gha)
Mean	3.9	7.0
Median	3.5	6.3
Mode	4.0	5.3
Minimum	0.9	2.8
Maximum	14.3	16.3
Range	13.4	13.5
Standard Deviation	2.1	2.8

The values in Table 4.10 display the change in ecological footprint values after downsizing to a tiny home from one's previous housing type. This table below shows that there is a relatively high range and high standard deviation for the ecological footprint values, showing that the data is considerably spread out. Figure 4.20 presents a histogram of the changes in

ecological footprints by increments of 1.0 global hectares.

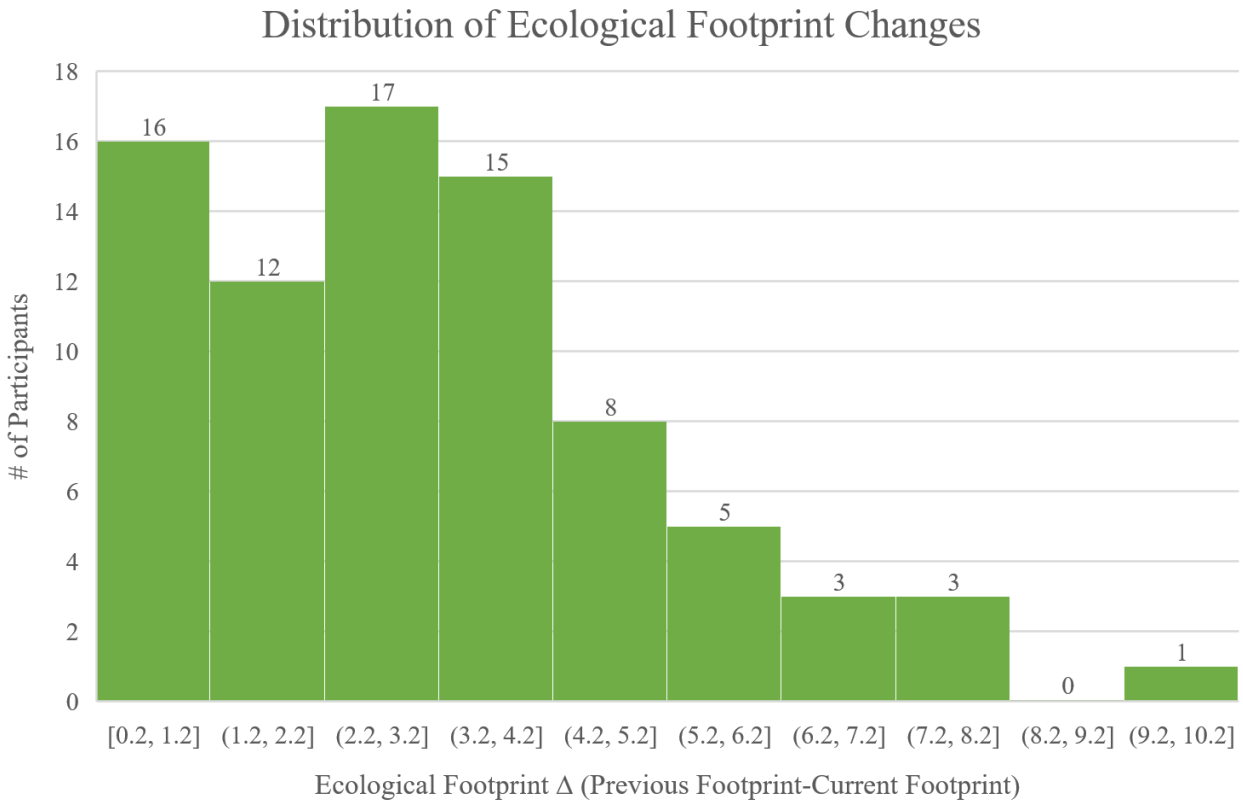

Figure 4.20. Distribution of Ecological Footprint Changes (Deltas).

Figure 4.20 shows that the largest number of study participants decreased their footprints between 2.2 and 3.2 global hectares.

Ecological Footprints Compared to National Averages: Current ecological footprints of tiny home downsizers were next compared to national ecological footprint averages. Only ecological footprint averages in the United States were considered for comparison since all 80 study participants current reside in the United States, which was a criterion of participation. The researcher chose to use the Global Footprint Network's national average value since their methodology was used to calculate footprint values for this study. According to the Global Footprint Network, the ecological footprint of an average American is 8.4 global hectares (gha),

the sixth largest average in the world (Global Footprint Network, 2018h). Table 4.11 displays the current, previous, and national ecological footprint values with the associated Earth values.

Table 4.11

Pre-Downsizing, Post-Downsizing, and National Ecological Footprint/Earth Values

	Current Ecological Footprint Values	Previous Ecological Footprint Values	National Ecological Footprint Value
Mean	3.9 gha	7.0 gha	8.4 gha
Equivalent Earth Value	2.3 Earths	4.1 Earths	4.9 Earths

The average decrease in footprint pre- and post-downsizing was 3.1 global hectares. Surprisingly, the previous ecological footprint of the 80 study participants (7.0 gha) was already smaller than that of the average American's (8.4 gha). This could be for a variety of reasons, which will be discussed in Chapter 5.

Comparison of Ecological Footprint Components: Part of measuring ecological footprints was also to measure the individual components of an ecological footprint, including food, housing, transportation, goods, and services. The Global Footprint Network online calculator provided values for each of these components once an individual's data was entered into the calculator. All five component values combined to create the overall ecological footprint number. This helped to show the researcher which ecological footprint components were highest for study participants. Appendix V shows an example of how the calculator interface showed the component values by hovering over the component column. Table 4.12 shows an example of each of the five component values for each participant, when added together, equal their overall ecological footprint value.

Table 4.12

Example Ecological Footprint Component Values

Ecological Footprint Component	Values (in global hectares)
Food Component	2.0
Housing Component	0.2
Transportation Component	1.6
Goods Component	0.9
Services Component	1.2
Ecological Footprint	**5.9**

The researcher examined the individual ecological footprint component values for all 80 study participants to determine the average values in each area and how they changed after downsizing to a tiny home, thereby identifying what components were most impacted by living in a tiny home, both positively and negatively. Table 4.13 shows the mean values and changes (deltas) for each ecological footprint component across the 80 study participants. Figure 4.21 presents these mean values and offers a visual comparison between previous housing and current housing in a tiny home.

Table 4.13

Mean and Delta (Δ) of Ecological Footprint Component Values

Ecological Footprint Component	Mean Value for Previous Housing (gha)	Mean Value in Tiny Housing (gha)	Δ
Food Component	1.339	0.913	-0.426
Housing Component	1.155	0.228	-0.927
Transportation Component	2.383	1.648	-0.735

Table 4.13 (cont'd)

Ecological Footprint Component	Mean Value for Previous Housing (gha)	Mean Value in Tiny Housing (gha)	Δ
Goods Component	0.994	0.299	-0.695
Services Component	1.143	0.788	-0.355

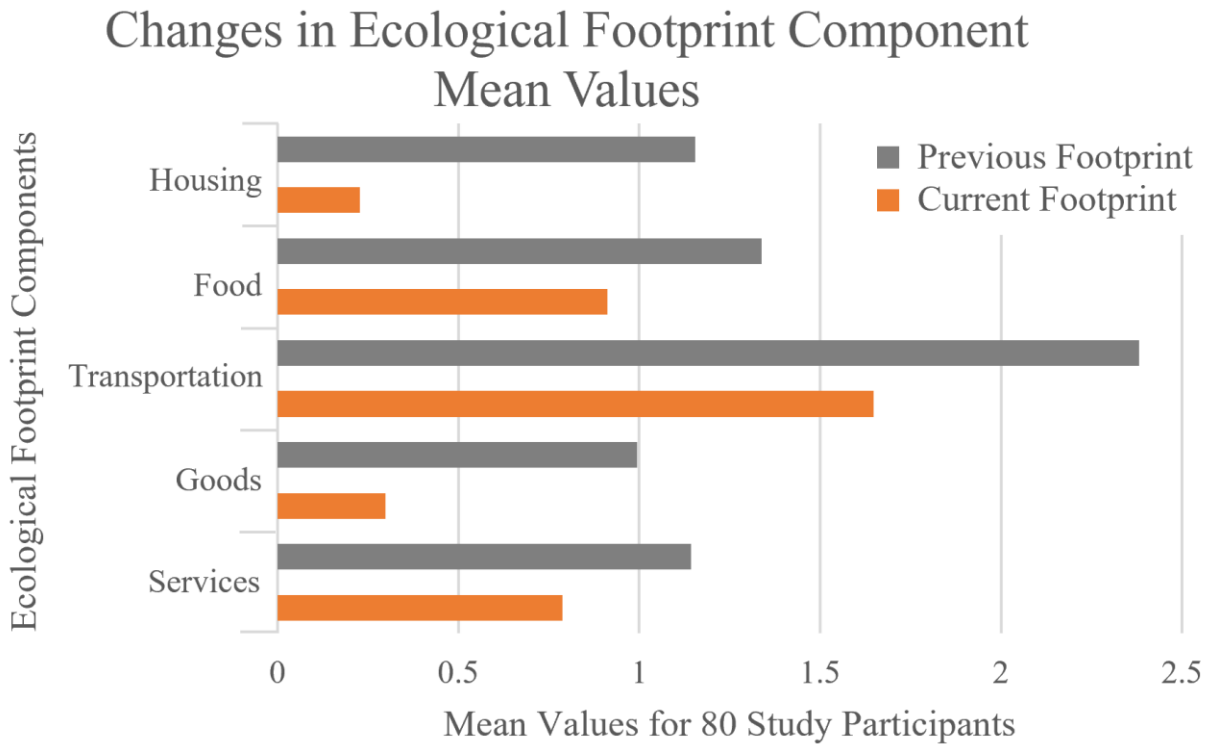

Figure 4.21. Changes in ecological footprint component values.

Except for the housing component, Table 4.13 shows that the transportation component was the most positively influenced across all 80 study participants after living in a tiny home for a year or more, with a delta of -0.735 global hectares. Based on the delta values in Table 4.13, no components were negatively influenced when looking at the averaged values. However, the least positively influenced component value was the services value.

Figure 4.21 shows that all five components were positively impacted in terms of reducing one's overall ecological footprint. The most impacted component was the housing component,

which was expected given that study participants were drastically reducing their housing size. The transportation component was the second-most affected, having an average change of -0.735 gha. The services component was the least affected, with an average change of -0.355 gha, although still a measurable improvement. It is important to emphasize that while changes in all of the ecological footprint components may not necessarily be directly caused by choosing to downsize to a tiny home, they do appear to be correlated.

To determine changes in the five ecological footprint components, the researcher first looked at the average component values across all 80 participants as previously described. Then, the researcher looked at individual component values for the participants and manually counted the number of individuals who had both positive and negative changes in component values. This approach yielded different results than looking at averaged values. The researcher manually counted which components were positively, negatively, or not at all influenced for each participant (Table 4.14).

Table 4.14

Number of Participants Positively, Negatively, and Not Influenced By Each Component of Ecological Footprint (n=80)

	Food	Housing	Transportation	Goods	Services
Positively Influenced	55	78	50	67	66
Negatively Influenced	10	0	22	3	4
Not Influenced	15	2	8	10	10

This approach also showed that the housing component was the most positively influenced. Aside from the housing component, the goods component was the next most

positively influenced, with 67 participants showing a positive change. By using this approach, the transportation component was by far the most negatively influenced component, with 22 instances of negative behavior reported by the nine interviewees, as seen in Table 4.14.

The connections between downsizing to a tiny home and changes in behaviors leading to a smaller ecological footprint were explored in more detail in the second part of the study, described next.

Interviews

Semi-structured interviews with nine purposively-selected study participants were conducted to allow data collection from key informants. To review, these nine individuals were chosen because they had indicated in the survey that their behaviors changed after downsizing. This allowed the researcher to most easily identify changing behaviors most efficiently.

These nine interview participants comprised slightly over 10% of the total study participants. Eight of these interviews were conducted by phone, while the last was conducted via email. The email interview data provided a comparable level of richness as the phone interviews, in terms of number of behaviors and reasons identified, and as such was treated the same as interview transcripts in the data analysis process.

Behavior Data

Interview participants were asked eight questions to seek further details about their responses to the online survey to further explore the relationship between changing ecological footprints and influencing behaviors. The goal of the interviews was to create an inventory of noteworthy behaviors that influenced changes in ecological footprints.

Interviews were recorded and transcribed to text files to comprise a data set for this part of the study. The raw data from the interviews, with any identifying information removed, are

available upon request. Interview transcripts were coded, and the researcher developed an inventory of behaviors that interviewees perceived as pro- or non-environmental and relevant to ecological footprints. Behavior codes then categorized into overarching categories which were adopted post-downsizing that fell under each ecological footprint component. This process is described in more detail in Chapter 3. Interview questions #2-6 from Table 3.3 were used to elicit respondent descriptions of their behaviors influencing their answers during the ecological footprint survey, which were then coded and analyzed to result in the list of associated behaviors.

Table 4.15 displays the full inventory of the 113 distinct behaviors that were identified throughout the interviews, grouped into the 27 categories. The number of interviewees mentioning each behavior was also tracked, as was the respondent's perceived classification of positive or negative behaviors in regard to environmental impact.

The classification of positive or negative behaviors was based on individual descriptions during the interviews and classifications were unanimous. These classifications capture the interviewee's perception of whether the behavior had positive or negative environmental impact. The researcher did not guide interviewees beyond the basic interview questions asked (Table 3.3). The researcher captured what interviewees shared and captured their implicit determination about whether their behavior would positively or negatively impact footprint. It must be noted that if a behavior was classified by a respondent as positive in this study, it was not verified using more precise measures by the researcher but rather taken at face value as supplied by the interviewee.

These behaviors were classified as positive or negative with regard to perceived environmental impact by interviewees, but they could be rated in terms of other types of impact as well. For instance, many of them would be perceived to represent hardship or negative impact

from a social standpoint, such as fewer showers or bucket showers. Therefore, this classification is limited in scope to environmental associations. Additionally, many of these behaviors are tied together and are not necessarily distinct, meaning they are not self-contained items.

Table 4.15

Inventory of Self-Reported Behaviors Affecting Ecological Footprints after Downsizing to a Tiny Home (n=9)

Ecological Footprint Component(s)	Behavior Category	Specific Behavior	Perceived Environmental Impact[1]	n
Housing	Water Conservation	Conserves water	+	6
		Handwashes dishes	+	3
		Harvests rainwater	+	2
		Uses grey water	+	1
		Uses water twice	+	1
		Takes shorter showers	+	1
		Showers less often	+	1
		Takes bucket showers	+	1
		Does not wash recyclables thoroughly	-	1
		Flushes toilets less often	+	1
		Saves water with compost toilet	+	1

[1] Positive impact indicated by (+); negative impact indicated by (-)

Table 4.15 (cont'd)

Ecological Footprint Component(s)	Behavior Category	Specific Behavior	Perceived Environmental Impact[2]	n
	Solar	Uses solar	+	3
		Has PV solar technology but does not use it	-	1
		Orientated home for solar gain	+	1
	Laundry	Hang dries clothes	+	4
		Has an efficient washing machine	+	2
		Washes clothes more often	-	1
		Washes clothes less	+	1
		Uses scrub-a-bag for laundry once a week	+	1
		Uses centrifuge for drying clothes (3 minutes use of electricity)	+	1
		Wears clothes more	+	1
	Energy Usage	Reduces energy usage	+	1
		Uses air conditioning more	-	1
		Uses propane	+	1
		Does not use hair dryer, iron, or hair products	+	1
	Compost Toilet	Uses a composting toilet	+	4
	Housing Upkeep	Reduced housing upkeep	+	6

[2] Positive impact indicated by (+); negative impact indicated by (-)

Table 4.15 (cont'd)

Ecological Footprint Component(s)	Behavior Category	Specific Behavior	Perceived Environmental Impact[3]	n
	Off-Grid Capabilities	House enables off-grid living	+	2
	Recycled Materials	Repurposes local building materials	+	1
		Used coloring books as flooring treatment	+	1
		Upcycled/reclaimed resources for home	+	1
	Miscellaneous	Does own house repairs	+	1
		Researched non-toxic materials for home	+	1
		Has two or three purposes for items in home	+	1
Food	Gardening	Grows a lot of produce	+	2
		Organically gardens	+	2
		Does not have a garden anymore (but used to)	-	1
		Gardens	+	1
		Preserves produce in winter	+	1
		Container gardens	+	1
	Food Waste	Uses all purchased food items (little to no waste)	+	1
		Composts food scraps	+	1
		Composts human and vegetable waste	+	1
	Diet Changes	Uses more fresh produce	+	2

[3] Positive impact indicated by (+); negative impact indicated by (-)

Table 4.15 (cont'd)

Ecological Footprint Component(s)	Behavior Category	Specific Behavior	Perceived Environmental Impact[4]	n
	Eating Out	Eats out more often	-	1
	Grocery Shopping	Buys local meat	+	1
		Does not grocery shop as often as before	+	1
		Goes to grocery store more often	-	1
		Buys smaller quantities of food	+	1
	Miscellaneous	Does not use plastic bags for produce	+	1
		Shares kitchen utensils with partner	+	1
		Got rid of most kitchen appliances	+	1
		Shares fridge with coworker	+	1
Transportation	Driving Frequency	Drives more	-	4
		Drives less	+	1
		Combines driving trips to save time and energy	+	1
	Vehicle	Has an SUV with low fuel economy	-	2
		Bought electric vehicle	+	1
		Drives a smaller, efficient car	+	1
		Drives vintage, efficient car	+	1
	Other Transportation	Flies more frequently	-	1
		Bikes most places	+	1

[4] Positive impact indicated by (+); negative impact indicated by (-)

Table 4.15 (cont'd)

Ecological Footprint Component(s)	Behavior Category	Specific Behavior	Perceived Environmental Impact[5]	n
	Miscellaneous	Uses public charging stations for electric vehicles	+	1
Goods & Services	Purchasing Philosophy	Purchases items intentionally	+	4
		Uses "one in one out" purchasing approach	+	2
		Lives a zero-waste lifestyle	+	2
		Replaces multiple items with one higher quality item	+	1
		Uses natural resources more often than artificial ones	+	1
		Lives a minimal waste lifestyle	+	1
		Has conscious decisions to minimize waste	+	1
	Purchasing Frequency	Purchases less	+	4
		Initially purchased items to fit into tiny home	-	1
		Purchases more online (more packaging waste)	-	1
	Types of Purchases	Buys second-hand clothes	+	2
		Spends money on housing upgrades, not physical objects	+	1
		Does not buy bulk items	+	1
		Buys audiobooks	+	1
		Buys items in smaller quantities with more packaging	-	1

[5] Positive impact indicated by (+); negative impact indicated by (-)

Table 4.15 (cont'd)

Ecological Footprint Component(s)	Behavior Category	Specific Behavior	Perceived Environmental Impact[6]	n
		Purchases low tech items	+	1
		Purchases items that are packaged responsibly	+	1
		Only purchases items from sustainable manufacturing companies	+	1
	Recycling	Recycles all recyclable items	+	3
		Recycles less	-	2
		Recycles more	+	1
		Recycles, reuses, and repurposes items	+	1
		Washes out recyclables thoroughly	+	1
		Does not wash recyclables thoroughly	-	1
	Household Products	Makes own household products	+	2
		Uses biodegradable products	+	2
		Uses non-toxic products	+	2
		Uses reusable household products (plasticware, wraps, storage bags)	+	2
		Reuses house items, like Ziploc bags	+	2
		Reuses household goods	+	1
		Reuses personal items, like face towels	+	1
		Uses oils instead of perfumes	+	1
		Uses oils instead of medicines	+	1

[6] Positive impact indicated by (+); negative impact indicated by (-)

Table 4.15 (cont'd)

Ecological Footprint Component(s)	Behavior Category	Specific Behavior	Perceived Environmental Impact[7]	n
		Uses wool balls	+	1
	Plastic Use	Reduces use of single-use plastic	+	2
		Uses reusable grocery bags	+	2
		Uses reusable water bottles	+	2
		Keep reusable eatery items in car to replace disposable options	+	2
		Uses reusable Corelle bowls	+	1
		Purchases non-plastic alternatives	+	1
		Uses reusable items	+	1
	Amount of Belongings	Got rid of unused possessions after downsizing	+	2
		Downsized wardrobe	+	2
		Has less clothing, kitchen items, furniture	+	1
		Got rid of items before downsizing	+	1
		Stores storage items elsewhere	-	1
	Miscellaneous	Repairs own clothes	+	1
		Makes own clothes	+	1
		Uses more public spaces	+	1
		Organizes bulk items	+	1
Total # of Specific Behaviors Identified:		**113**		

[7] Positive impact indicated by (+); negative impact indicated by (-)

It is important to note that some behaviors could fall under multiple ecological footprint components. An example of this is the use of composting toilets. This could fall under the housing footprint component since it is a design element of one's home and impacts one's water conservation within their home. Alternately, a composting toilet could fall under the goods and services footprint component since it is a tangible item that one purchases and uses. Each behavior was placed into only one overarching footprint component that was the most appropriate fit for the specific behavior, based on relevant ecological footprint literature that described the footprint components in detail and the best judgement of the researcher.

It is also noteworthy that this inventory of behaviors is not an exhaustive list of all possible behaviors that could influence changes in ecological footprints. This list identifies noteworthy behaviors that the nine interview participants of this research identified in their individual lifestyles. This is an inventory of behaviors identified by participants as being relevant to their environmental impacts and the direction of impact (positive or negative) each behavior had as perceived by the interviewees, based on the content of the interviews. The next sections present a synthesis and overview of the behaviors discussed in the interviews for each of the five components.

Figure 4.22 summarizes the behaviors identified in the post-interview analysis, grouped into thematic categories corresponding to the five ecological footprint components. The last two categories, goods and services, were grouped together in this thematic analysis because there was much overlap in behaviors that contributed to both components.

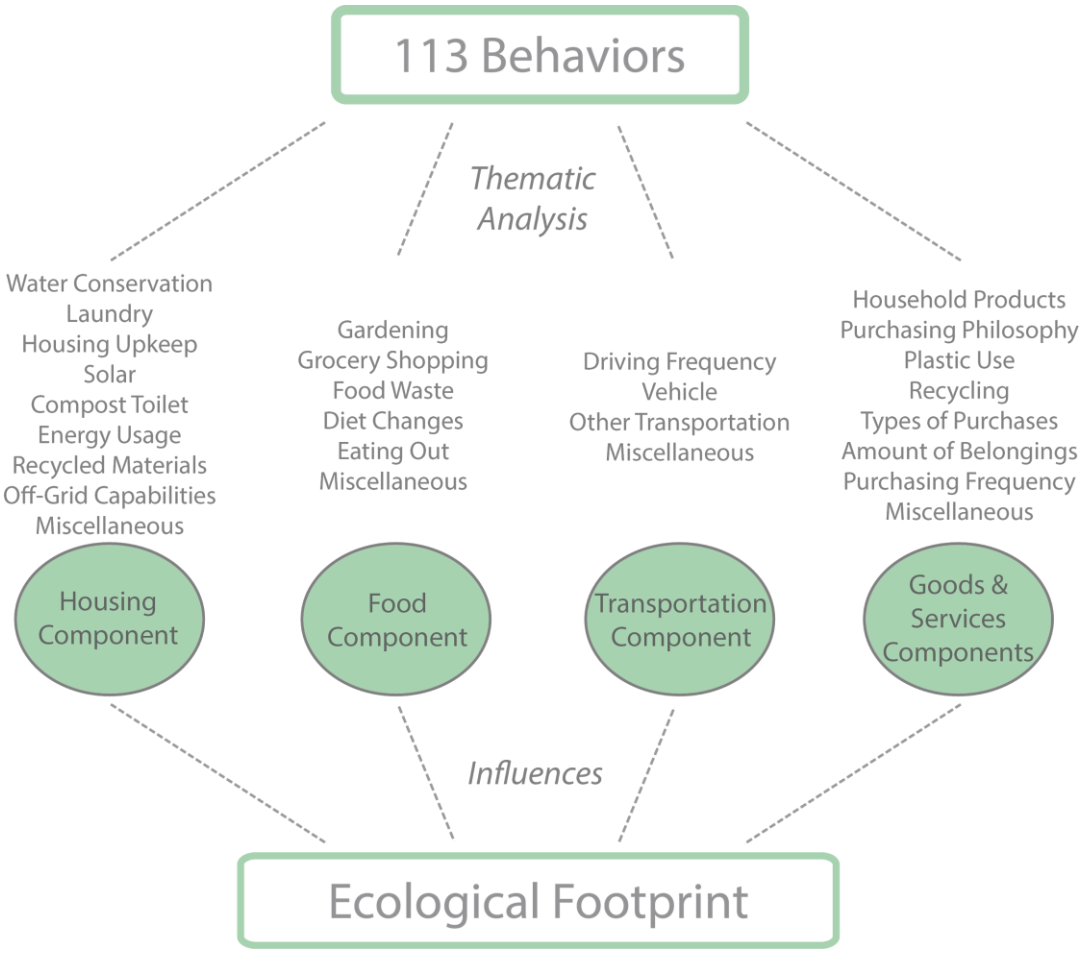

Figure 4.22. Diagram of coding categories.

For each ecological footprint component, there were four to nine behavior categories within. These categories were created as the researcher transcribed and coded the recorded interviews with the nine participants, making them emergent themes, as described in Chapter 3. Each of the 27 categories had one or more behaviors associated with it. Most behaviors had the potential to both positively and negatively influence ecological footprints, and classification was based on in-vivo coding described in Chapter 3. It is worth noting that while each participant discussed their behaviors in a way that suggested a positive or negative impact, their perceptions were not verified by the researcher but were taken at face value. these assumptions were not

necessarily correct nor provided a complete picture. Chapter 5 discusses potential limitations of this approach in more detail.

Housing Behaviors Data: The ecological footprint component that had the most behaviors associated with it was the housing component. This was expected given that study participants were drastically reducing their housing size.

Seven of nine interviewees mentioned behaviors falling into the water conservation category, including using grey water, taking fewer or shorter showers, and hand washing dishes. Other common behavior categories in the housing component included laundry, housing upkeep, use of solar, and use of a compost toilet.

In the housing component, there were four negative behaviors mentioned in total. These included washing clothes more, using air conditioning more often than in previous housing, washing recyclables less thoroughly, and having solar technology but not using it. Miscellaneous behaviors included doing own housing repairs, researching non-toxic building materials for homes, and incorporating items into homes that have multiple purposes.

Food Behaviors Data: For the food ecological footprint component, six behavior categories were developed. Gardening was the most common behavior mentioned by three different participants. This was followed by changes in grocery shopping, reducing food waste, changes in diets, and eating out more often.

Three negative behaviors were mentioned in the interviews. The first participant shared that they did not garden anymore due to their impermanent parking situation with their tiny home. Another mentioned that they went to the grocery store more often, since they could not store many food items in their tiny home. Lastly, one participant mentioned that they eat out more often due to a smaller kitchen and minimized ability to cook meals at home.

Miscellaneous behaviors included reducing plastic use for produce items, sharing kitchen utensils with other housing occupants and getting rid of most kitchen appliances. One participant mentioned that they do not store food at home but rather at work, and share refrigerator space with coworkers, therefore eliminating the need for a refrigerator at home.

Transportation Behaviors Data: The transportation ecological footprint component presented the highest number of distinct negative environmentally-influential behaviors of any other component. The most common behavior category mentioned related to driving frequency. Out of six participants who mentioned a change in driving, four participants shared that they drive more often than before downsizing to a tiny home. In all six cases, the increase in driving was due to tiny home parking restrictions. Tiny homes cannot be parked in many locations, and this has forced some to relocate to a more rural location. This increases vehicle miles traveled for many if they have to commute further for work or school.

The two other behavior categories were a change in vehicle type, and an increase in alternative transportation. Three out of five participants shared that they upgraded to a more efficient vehicle, while two purchased a vehicle with a lower fuel economy to tow their tiny homes. In terms of alternative transportation, one out of two participants shared that they began using public transportation more and biked when possible. Alternatively, the other participant shared that they began to fly more often due to the move associated with their tiny home. The one miscellaneous behavior for the transportation component was using public charging stations to charge electric vehicles.

Goods & Services Behaviors Data: Despite the housing component having the most associated behavior categories, the goods & services component had the most behaviors mentioned overall, with 73 behaviors mentioned by the nine study participants. The most commonly behavior

category mentioned related to changing household products, which was mentioned by six participants. In most cases, this referred to a conscious decision to switch household products such as laundry detergent or dish soap to non-toxic or biodegradable products. Other behavior categories included: a change in purchasing philosophy, reduced plastic use, change in recycling behaviors, change in types of purchases, reduced number of belongings, and reduced amount of purchasing in general.

Between the 73 behaviors mentioned for this component, only six behaviors were ones that were perceived by respondents as negatively influencing one's ecological footprint in regard to the goods and services footprint component. One such behavior, reported by two individuals, was recycling less due to lack of storage space and/or lack of curbside recycling services. Other negative behaviors included buying items in smaller quantities with more plastic packaging, purchasing more online items causing an increase in shipping packaging waste, keeping excess items at storage facilities, and neglecting to wash recyclables out thoroughly which sometimes leads to inability to process these items at a recycling facility.

Miscellaneous behaviors included making and repairing one's own clothes for longer life cycles, organization of bulk items, and using more public spaces such as the library.

Behavior Reasons Data

To understand the relationship between behaviors and living in a tiny home, the researcher examined interview data to identify reasons behind behaviors. Once the reasons behind behaviors were identified, the researcher classified these into four categories to answer the question of how many of the behavior changes could be linked specifically to housing, and in particular, which were specific to the housing type of tiny homes. This question emerged after it became evident that some of the reported behaviors could apply to other housing types or even

other reasons such as retirement. This analysis became necessary to try to differentiate what could be specifically attributable to tiny homes. The researcher identified four categories to determine the level of association between behaviors and downsizing one's home: reasons related to physical house, reasons related to the home's location, reasons related to paradigm shifts in the mindset of the individuals, and reasons related to external factors (Table 4.16). Text in **bold** indicates reasons that were mentioned by multiple interview participants. This coding and classification process followed the same process and iterations that were used during the data analysis of the interview transcripts, which is described in Chapter 3.

Table 4.16

Reasons Behind Behaviors (Organized by Type)

Behavior	Reasons related to physical house	Reasons related home location	Reasons related to paradigm shifts in mindset	Reasons related to external factors
Conserves water	• Has a fillable water tank • No running water	• Location does not get much rain	• Increased awareness of natural resources • Wants to live intentionally	
Takes shorter showers		• Location does not get much rain		
Takes bucket showers	• Has a fillable water tank			
Handwashes dishes	• No dishwasher **(2)** • Has a fillable water tank			
Does not wash recyclables thoroughly	• No running water			

Table 4.16 (cont'd)

Behavior	Reasons related to physical house	Reasons related home location	Reasons related to paradigm shifts in mindset	Reasons related to external factors
Flushes toilet less often			• Awareness that flushing toilets waste water	
Uses a composting toilet	• Compost toilet came with house			
Reduces energy usage			• Tries to be off-grid	
Uses solar			• Tries to be off-grid	
Does not use hair dryer, iron, or hair products			• Awareness that items waste a lot of power	
Uses air conditioning more		• Location is hot		
Uses propane	• Uses propane so that solar can support the rest of the house			
Has solar panel technology but does not use it				• Has not learned to set it solar panel technology
Washes clothes more	• No space for laundry basket in home • Washing machine is smaller than most			
Washes clothes less	• Has to go to a laundromat (no washer or dryer in home)			

Table 4.16 (cont'd)

Behavior	Reasons related to physical house	Reasons related home location	Reasons related to paradigm shifts in mindset	Reasons related to external factors
Uses centrifuge for drying clothes	• Does not have washer or dryer			
Hang dries clothes	• Uses dryer for storage			
Reduced housing upkeep	• House designed specifically for occupant • Small space			
Used coloring books as flooring treatment				• Did not like existing floor
Researched non-toxic materials for home			• Desire to design zero waste home and lifestyle	
Has two or three purposes for items in home			• Purposefully wants to reduce carbon footprint	
Does not have garden anymore		• In a temporary location		
Uses more fresh produce				• Hate throwing things away Grows own food
Uses all purchased food items	• Smaller fridge			
Buys smaller quantities of food	• Because of downsizing			• Sharing facilities with others
Goes to grocery store more often		• Lives close to grocery store		

Table 4.16 (cont'd)

Behavior	Reasons related to physical house	Reasons related home location	Reasons related to paradigm shifts in mindset	Reasons related to external factors
Does not grocery shop as often as before	• Limited fridge space			
Shares fridge with coworkers	• No fridge in tiny home			
Eats out more often	• Smaller kitchen			
Buys local meat		• Rural location (accessible to farms)		
Drives more		• Lives outside of city limits to park legally **(4)**		
Flies more frequently				• More time to travel after retirement
Bought electric vehicle	• Part of downsizing process			
Drives smaller, efficient car				• To save money
Drives vintage, efficient car				• Car is simpler and made to last
Combines driving trips to save time and energy		• Rural location		
Bikes most places		• In a permanent, central location		
Purchases less	• Space constraints of home **(2)**			

Table 4.16 (cont'd)

Behavior	Reasons related to physical house	Reasons related home location	Reasons related to paradigm shifts in mindset	Reasons related to external factors
Purchases items intentionally	• Space constraints of home **(2)**			
Uses one in one out purchasing approach	• Space constraints of home			
Purchases more online				• More convenient
Has less clothing, kitchen items, furniture	• Space constraints of home			
Repairs own clothes	• Limited wardrobe after downsizing			
Uses reusable grocery bags		• Influence of previous location		
Recycles less	• Lack of space to store recyclables **(2)**	• Lack of curbside recycling services in current rural location **(2)**		
Recycles more			• More awareness of recycling	
Got rid of unused possessions before downsizing			• Changing mindset	
Downsized wardrobe	• Limited closet space			

Table 4.16 (cont'd)

Behavior	Reasons related to physical house	Reasons related home location	Reasons related to paradigm shifts in mindset	Reasons related to external factors
Initially purchased items to fit in tiny home	• Could not fit original household items in tiny home			
Uses reusable corelle bowls				• Does not like cling wrap
Uses reusable household products	• Space constraints of home **(2)**		• Changing mindset	
Replaces multiple items with one higher quality item	• Space constraints of home			
Buys audiobooks	• Space constraints of home			
Stores items elsewhere	• Space constraints of home			
Lives a minimal waste lifestyle	• Space constraints of home			
Uses natural resources more than artificial ones			• Perspective change	

The interview protocol was not designed initially to identify specific reasons behind behaviors, which is a limitation of this research. Still, by reexamining the interview data, the researcher was able to identify reasons for close to half (56) of the 113 behaviors (46% of the behaviors, to be exact). Thirty out of 56 behaviors were directly related to the smaller house

itself, 11 out of 56 were related to the home's location, 11 out of 56 were related to paradigm shifts in the mindsets of the interview participants that coincided with and possibly influenced the decision to downsize, and nine out of 56 behavior were related to external factors that may have also influenced or been coincident with the decision to downsize but were not directly related to housing. Some behaviors had numerous reasons that fell into multiple categories, as seen in the above table. This provided a more thorough understanding of the information that was collected, and which behaviors identified in the interviews were directly related to housing. The nine interview participants, including the one email interview participant, each contributed reasons for five or more of their behaviors.

It is interesting to note that most of the housing-dependent reasons listed in Table 4.16 that were identified throughout the interviews do not apply specifically to just tiny homes. Perhaps the only reason that is exclusive to tiny homes is the use of a compost toilet, which is not common in any other type of housing. The rest of the reasons, such as "space constraints of home" are relevant for other forms of small housing like micro apartments or mobile homes as well as tiny homes. This shows that many behaviors and their associated reasons are more likely caused by downsizing than by downsizing specifically to a tiny home.

By identifying the reasons behind behaviors, as identified by the interviewees themselves, the researcher was able to identify explanations and interpretations of the behaviors of the research participants. This approach helped to provide a more complete picture of the experiences of tiny home downsizers and what factors led to their changing behaviors.

Based on this analysis, some behaviors are directly related to characteristics of the tiny home that the individuals downsized to, the location of the tiny home, paradigm shifts in the mindsets of the participants, and reasons related to external factors that did not fall under the

previous three categories. This helped to describe the phenomenon of downsizing to a tiny home in more detail and differentiate what behaviors were a direct result of downsizing to a tiny home and its respective location.

Mixed Method Data Analysis Findings

Once the survey and interview data were gathered and analyzed, the researcher analyzed the data with both a quantitative and qualitative lens. The data analysis processes are described in Chapter 3.

Survey Demographics vs. Interview Demographics

The first step in the mixed method data analysis for this study was to compare the demographics of the 80 survey participants to the nine interview participants to ensure that there was enough similarity for data from the two groups to be compared (Table 4.17).

Table 4.17

Comparison of Survey and Interview Demographic Characteristics

	Demographic Characteristics	% of 80 Survey Participants	% of Nine Interview Participants
Ethnicity	American Indian or Alaska Native	1.25%	0%
	Black or African American	1.25%	0%
	Hispanic, Latino, or Spanish Heritage	2.5%	11.1%
	Mixed	1.25%	0%
	Native Hawaiian or Other Pacific Islander	1.25%	0%
	White	92.5%	88.9%

Table 4.17 (cont'd)

	Demographic Characteristics	% of 80 Survey Participants	% of Nine Interview Participants
Gender	Male	23%	22.2%
	Female	77%	77.8%
Age	18-24	2%	0%
	25-34	30%	11%
	35-44	20%	22%
	45-54	9%	22%
	55-64	33%	33%
	65-74	6%	11%
Employment Status	Working full-time	49%	67%
	Working part-time	19%	11%
	Retired/working part-time	41%	11%
	Disabled	1%	11%
	Other	27%	0%
Income Range	Less than $10,000	10%	0%
	$10,000-$19,999	10%	11%
	$20,000-$29,999	23%	11%

Table 4.17 (cont'd)

Demographic Characteristics	% of 80 Survey Participants	% of Nine Interview Participants
$30,000-$39,999	19%	11%
$40,000-$49,999	3%	0%
$50,000-$59,999	8%	22%
$60,000-$69,999	8%	0%
$70,000-$79,999	8%	11%
$80,000-$89,999	5%	22%
$90,000-$99,999	4%	0%
$100,000-$149,999	3%	0%
More than $150,000	3%	11%

The typical participant for this study, for both the online survey and interview, was a white female between the ages of 55 to 64 that worked full-time. The similar trends in Table 4.17 between survey and interview participants shows that these two samples are equally representative of the same population.

Participant Characteristics vs. Ecological Footprints

The next task was to explore whether there were any discernible trends in ecological footprints across different population characteristics, including participant ages, employment statuses, incomes, reasons to downsize, length of time living in tiny homes, mobility and setting of tiny homes, and previous home types were all compared to average ecological footprints.

Table 4.18 shows the average ecological footprint across various age ranges along with the number of respondents in each range.

Table 4.18

Breakdown of Age Ranges Compared to Ecological Footprint Values

Age Range	Average Ecological Footprint Value	# of Participants
18-24	4.35 gha	2
25-34	4.34 gha	24
35-44	3.99 gha	16
45-54	2.77 gha	7
55-64	3.67 gha	26
65-74	3.68 gha	5

Among the 80 participants, those between the ages of 45 and 54 had, by far, the lowest ecological footprints after living in a tiny home for a year or more. Average ecological footprints between the ages of 18 and 34 had larger ecological footprints than those between the ages of 55 and 74, showing that millennials in this study were more likely to have larger footprints than baby boomers.

Next, employment statuses were compared to ecological footprints of the research participants to see if there was a relationship between the two. Table 4.19 displays the average footprints for each of the employment statuses along with number of respondents in each category.

Table 4.19

Employment Statuses Compared to Ecological Footprint Values

Employment Status	Average Ecological Footprint Value	# of Participants
Working full-time	4.27 gha	39
Working part-time	3.73 gha	15
Unemployed	3.18 gha	6
Retired	3.61 gha	11
Retired/Working part-time	3.87 gha	3
Student	3.33 gha	2
Other	2.13 gha	4

This shows that those who work full-time have the highest average ecological footprint and those who fell under the "other" category have the lowest. Specifically, the "other" category included those who were disabled, stay at home parents, or in the military. These were categorized as "other" since these individuals selected the employment status "other" in the survey itself. Annual income ranges were also compared to the ecological footprints of the study participants. This information is displayed in Figure 4.23.

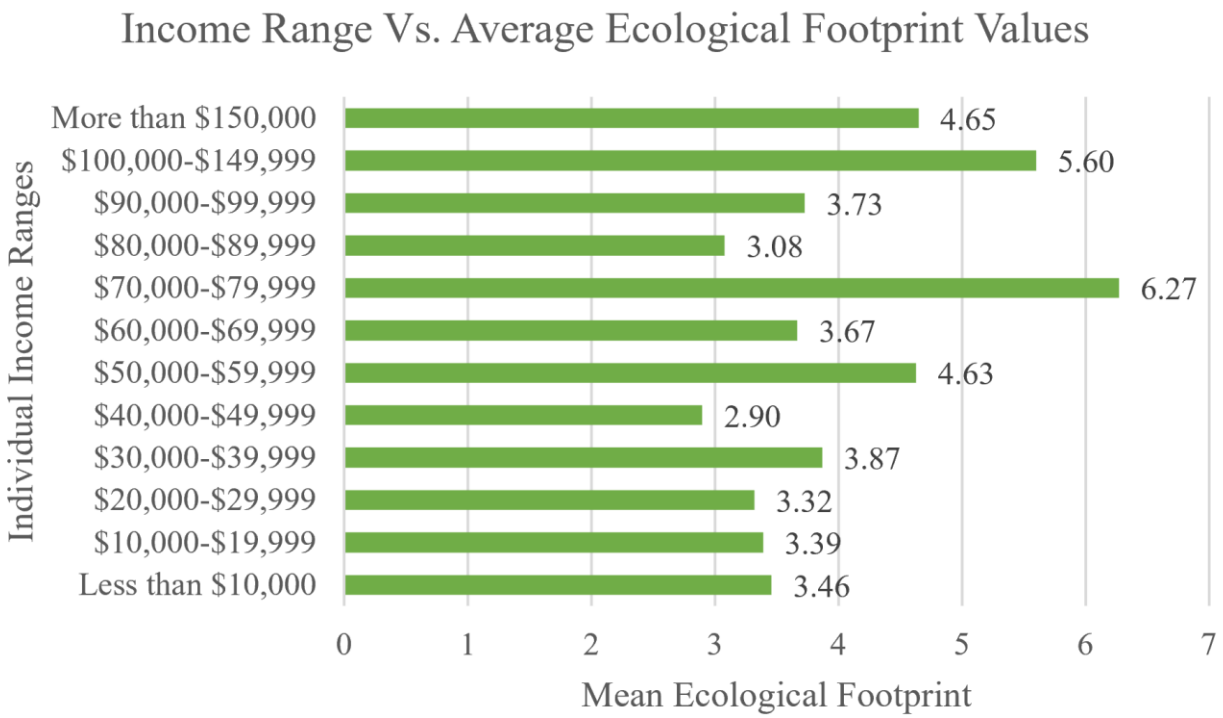

Figure 4.23. Income Range vs. Average Ecological Footprint Values.

This approach showed that there was considerable variation by income level and no clear trend showing a relationship between income level and ecological footprints. The income range with the lowest ecological footprint average was $40,000-$49,999, while the income range with the highest footprint average was $70,000-$79,999.

Reasons to downsize were also looked at to identify if there was a relationship between smaller ecological footprints and downsizing for environmental reasons. To review, the survey asked participants, “Why did you decide to move into a tiny home? Please list reasons in order of importance”. The population was separated into those who provided environmental reasons in their list of free-response reasons to downsize and those who did not. The average ecological footprint for the group who indicated environmental reasons as most important was smaller than the other group by 0.6 gha (Table 4.20). The full list of reasons to downsize can be found in Table 4.2.

Table 4.20

Reasons to Downsize Compared to Ecological Footprint Values

Were Environmental Reasons Included?	Average Ecological Footprint Value
Yes	3.6 gha
No	4.2 gha

The researcher also looked for relationships between length of time living in a tiny home and average ecological footprints, to see if living longer in a tiny home correlated with smaller ecological footprints. Table 4.21 displays these findings.

Table 4.21

Length of Time in Tiny Home Compared to Ecological Footprint Values

Length of Time	Average Ecological Footprint Value	# of Participants
Between 1 and 2 years	4.5 gha	39
Between 2 and 3 years	3.2 gha	20
Between 3 and 4 years	3.1 gha	10
Between 4 and 5 years	4.4 gha	2
Between 5 and 6 years	3.1 gha	4
Between 6 and 7 years	1.9 gha	2
Between 7 and 8 years	3.9 gha	1
Between 8 and 9 years	N/A	0
Between 9 and 10 years	4.3 gha	1
Between 10 and 11 years	N/A	0
Between 11 and 12 years	N/A	0
Between 12 and 13 years	5.8 gha	1

Almost half of the study participants had lived in their tiny home for under two years. Their average ecological footprint value was higher than any other value except for the single participant who lived in their tiny home between 12 and 13 years. There was no discernable pattern across the population in terms of length of time spent living in a tiny home vs. ecological footprint.

The mobility of tiny homes was also compared to ecological footprint values. Tiny homes can either be mobile, semi-mobile, or permanent structures. Table 4.22 shows the ecological footprint values compared to the mobility of the tiny homes of the study participants. Again, no overwhelming correlation was observed.

Table 4.22

Tiny Home Mobility Compared to Ecological Footprint Values

Tiny Home Mobility	Average Ecological Footprint Value	# of Participants
Mobile	3.85 gha	34
Semi-mobile	4.01 gha	34
Permanent	3.53 gha	12

The setting of tiny homes (rural, suburban, urban) was also compared to footprints, revealing that participants living in urban settings had on average a greater footprint (4.8 gha) than those in rural settings (3.9 gha).

Lastly, previous housing types were examined to see if there was a relationship between one's previous housing type and current ecological footprints after living in a tiny home for a year or more. Table 4.23 displays the footprint values for each housing type, showing that

participants who previously lived in luxury condominiums had the highest footprints after downsizing to a tiny home.

Table 4.23

Previous Housing Type Compared to Ecological Footprint Values

Previous Housing Type	Average Ecological Footprint Value	# of Participants
Duplex, row house, or building with 2-4 units	3.3 gha	7
Freestanding house with running water	3.7 gha	55
Multi-story apartment	4.4 gha	14
Mobile home or recreational vehicle	4.7 gha	1
Luxury condominium	5.2 gha	3

Analysis of Ecological Footprint Values

As previously stated, *all* survey respondents had a smaller ecological footprint after downsizing to a tiny home than in their previous housing situation. The researcher aimed to compare ecological footprint changes with reductions in square footage of the previous homes of the study participants. Figure 4.24 displays this comparison.

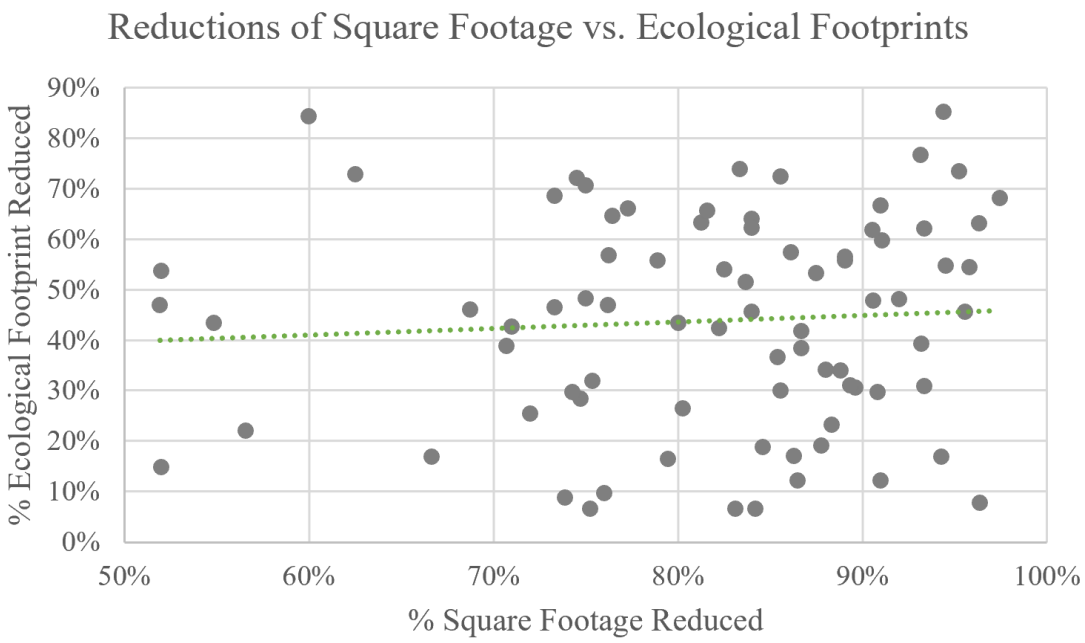

Figure 4.24. Reductions of Square Footage vs. Ecological Footprints.

Once these two variables were compared, the researcher aimed to answer the following hypothetical statement: "If I downsize by 90%, based on this study's data, my ecological footprint will reduce by ___%" to see if there was a relationship between extreme degrees of downsizing and substantially smaller ecological footprints. It was found that there was no obvious relationship between extreme degrees of downsizing and substantially smaller footprints.

Analysis of Ecological Footprint Component Changes and Behaviors

Ecological footprint component deltas were examined in detail for the nine interview participants. These participants were closely examined because the data included more detailed descriptions of these interviewees' behaviors and reasons behind behaviors, and the researcher was seeking to determine whether component changes aligned with this additional data. Table 4.24 displays which participants had positive, neutral, and negative changes in their five ecological footprint components. To determine the relationship between the survey and interview

data, the researcher identified which participants had negative changes in any ecological footprint component to see if the interview data explained the reasons behind these negative changes. Table 4.24 shows that there were four instances of negative changes in footprint components. The term "positive" means that the delta of the component value from pre- and post-downsizing is a positive value, signifying that one's resulting footprint is smaller. The term "negative" means the delta value is a negative value, signifying that one's resulting footprint is larger. "Neutral" means that there was no delta between the pre- and post-downsizing component values. In the table below, positive changes associated with footprint improvements are coded green and negative ones are coded red.

Table 4.24

Component Deltas for Nine Interview Participants

Participant Code	Housing Δ	Food Δ	Transportation Δ	Goods Δ	Services Δ
P1	Positive	Positive	Positive	Positive	Positive
P2	Positive	Neutral	Positive	Positive	Neutral
P3	Positive	Neutral	Positive	Positive	Neutral
P4	Positive	Negative	Negative	Positive	Negative
P5	Positive	Positive	Positive	Positive	Neutral
P6	Positive	Positive	Positive	Positive	Positive
P7	Positive	Positive	Negative	Positive	Positive
P8	Positive	Positive	Positive	Positive	Positive
P9	Positive	Positive	Positive	Positive	Positive

Next, the researcher reviewed transcript codes for the interviews with negative component changes to identify possible explanations. Table 4.25 shows the results of this inquiry

and displays the delta for each negative component change. The delta greater than 1.5 gha is displayed in **bold** to show that this behavior may influence negative changes in component values more than others.

Table 4.25

Contributing Behaviors to Negative Component Changes (gha)

Participant Code	Food	Transportation	Services
P4	Eats out more often (-0.7 gha)	Drives Further (-0.1 gha)	None found (-0.1 gha)
P7	N/A	Drives Further (**-2.3** gha)	N/A

Three of the four negative component changes were explained by two behaviors, eating out more often and driving further. No explanation was found within the interview data to explain the negative change for the service component for participant 4. The fourth negative change did not have a behavior within the interview data associated with it. This could be due to the participant not mentioning a specific behavior in the interview.

To take this a step further, the researcher also examined interview transcripts for the three interviewees with neutral component changes in Table 4.24 (P2, P3, and P5). These participants had no change in the food and service components of ecological footprint when comparing pre- and post-downsizing footprints. Table 4.26 displays these findings.

Table 4.26

Contributing Behaviors to Neutral Component Changes

Participant Code	Food	Services
P2	Does not have garden anymore	Recycles less
P3	None found	None found
P5	N/A	Purchases more online (more packaging waste), recycles less

There were five instances of neutral changes in footprint components; three of which had non-environmental behaviors associated with them, including not gardening anymore, recycling less often, and purchasing more online which produces more packaging waste. This disconnect shows that the footprint calculator may not have properly accounted for these behaviors.

Finally, the researcher identified the interview participants who had positive change in their component values and looked for positive behaviors mentioned in interviews that may explain these positive behaviors. Table 4.27 shares the positive behaviors and component deltas. Component deltas over 1.5 gha are displayed in **bold** to show which behaviors may be responsible for the largest changes in component values.

Table 4.27

Contributing Behaviors to Positive Component Changes (gha)

Participant Code	Housing	Food	Transportation	Goods & Services
P1	Does not use hair dryer, iron, or hair products (+0.8 gha)	Composts food scraps, got rid of most kitchen appliances (+0.2 gha)	Drives vintage, efficient car (+0.3 gha)	Lives a zero waste lifestyle, purchases less, purchases low tech items, purchases items that are packaged responsibly, recycles all recyclable items, uses reusable household items, uses reusable eatery items, purchases non-plastic alternatives (+0.3 gha, +0.1 gha)
P2	Conserves water, takes shorter showers, handwashes dishes, harvests rainwater, uses greywater, uses solar, reduces energy use, uses propane, uses compost toilet (+1.0 gha)	N/A	No positive behaviors identified in interview (+0.5 gha)	Purchases less, uses biodegradable products, makes own household products, uses reusable grocery bags, reduces use of single-use plastic, has less clothing, kitchen items, and furniture (+0.8 gha, N/A)
P3	Conserves water, use water twice, uses scrub-a-dub and centrifuge for laundry, hang dries clothes, uses compost toilet, reduced housing upkeep, house enables off-grid living (+1.2 gha)	N/A	No positive behaviors identified in interview (+0.8 gha)	Purchases items intentionally, conscious decisions to minimize waste, uses biodegradable products, uses non-toxic products, uses reusable corelle bowls, got rid of unused items before and after downsizing, downsized wardrobe, repairs clothes (**+1.6** gha, N/A)

Table 4.27 (cont'd)

Participant Code	Housing	Food	Transportation	Goods & Services
P4	Showers less often, conserves water, handwashes dishes, wears clothes more, washes clothes less (+1.1 gha)	N/A	N/A	Recycles more, uses reusable water bottles, uses more public spaces (**+1.5** gha, N/A)
P5	Reduced housing upkeep (+0.3 gha)	No positive behaviors identified in interview (+0.6 gha)	No positive behaviors identified in interview (+0.6 gha)	Purchases items intentionally, uses reusable household items, uses wool balls, makes own household products, uses all natural cleaners, uses oils instead of medicine or perfume (+0.2 gha, N/A)
P6	Conserves water, orientated home for solar gain (+0.2 gha)	Buys smaller quantities of food, shares refrigerator with coworkers (+1.3 gha)	Drives less (**+3.7** gha)	Lives a minimal waste lifestyle, uses natural resources more often, reuses household items, uses reusable eatery items (+0.6 gha, +0.4 gha)
P7	Conserves water, handwashes dishes, takes bucket showers, reduced housing upkeep (**+1.9** gha)	Buys local meat, shares kitchen utensils with partner (+1.4 gha)	N/A	Uses one in one out purchasing approach, replaces multiple items with ones of higher quality, buys second-hand clothes, spends $ on housing upgrades not physical items, buys audio books, recycles all recyclable items, reuses household items, uses reusable water bottles (+1.2 gha, +0.3 gha)

Table 4.27 (cont'd)

Participant Code	Housing	Food	Transportation	Goods & Services
P8	Harvests rainwater, uses compost toilet, uses solar, hang dries clothes, has efficient washing machine, upcycled and reclaimed resources for home, has multiple purposes for items, designed non-toxic and off-grid home (**+1.6** gha)	Organically gardens, composts human and vegetable waste (+0.2 gha)	Bikes most places (**+2.6** gha)	Lives a zero-waste lifestyle, purchases less, purchases items from sustainable manufacturing companies, avoids plastic items, makes own clothes (+1 gha, +0.5 gha)
P9	Hang dries clothes, uses compost toilet, does own house repairs, repurposes local building materials, used recyclable materials in home (+1.3 gha)	Organically gardens, preserves produce in winter, container gardens, does not grocery shop often (+0.9 gha)	Combines driving trips, drives a smaller, efficient car (**+2.9** gha)	Uses one in one out purchasing approach, purchases less, recycles and reuses and repurposes items (+1.2 gha, **+1.8** gha)

Although the third research sub-question for this study does not explicitly ask which behaviors most influence or least influence changes in footprints, this analysis showed that certain behaviors may influence ecological footprint changes more than others. Table 4.28 calls out which behaviors potentially contributed to negative or positive component deltas of over 1.5 gha.

Table 4.28

Behaviors that Contribute to Component Changes of Over 1.5 Global Hectares

Component	Negative Behaviors	Positive Behaviors
Housing	N/A	● Conserves water ● Harvests rainwater ● Handwashes dishes ● Takes bucket showers ● Uses compost toilet ● Reduced housing upkeep ● Uses solar ● Hang dries clothes ● Has efficient washing machine ● Upcycled and reclaimed resources for home ● Has multiple purposes for items ● Designed non-toxic and off-grid home
Food	N/A	N/A
Transportation	● Drives Further	● Drives less ● Combines driving trips ● Drives a smaller, efficient car ● Bikes most places
Goods & Services	N/A	● Purchases less ● Purchases items intentionally ● Uses one in one out purchasing approach ● Conscious decisions to minimize waste ● Uses biodegradable products ● Uses non-toxic products ● Uses reusable corelle bowls ● Got rid of unused items before and after downsizing ● Downsized wardrobe ● Repairs clothes ● Recycles more ● Recycles, reuses, and repurposes items ● Uses reusable water bottles ● Uses more public spaces

Given the inconsistencies between component changes and reasons discussed in the interviews, the next step was to compare the set of environmental-related behaviors identified in

the interviews to the specific questions from the ecological footprint calculator. This analysis would reveal whether the footprint calculator adequately takes into account the range of pro-environmental behaviors reported by interviewees that could influence actual ecological footprints. As such, the researcher decided to compare the 23 specific behavior categories to the survey protocol for this study to see what behaviors were accurately represented in the ecological footprint survey. Table 4.29 displays this comparison.

Table 4.29

Comparison Between Behavior Categories and Global Footprint Network Ecological Footprint Survey

Component	Behavior Category	Is Category Covered in Ecological Footprint Calculator?
Housing	Water Conservation	No
	Solar	Yes
	Laundry	No
	Energy Usage	Yes
	Compost Toilet	No
	Housing Upkeep	No
	Off-Grid Capabilities	Yes
	Recycled Materials	No

Table 4.29 (cont'd)

Component	Behavior Category	Is Category Covered in Ecological Footprint Calculator?
Food	Gardening	Yes
	Food Waste	No
	Diet Changes	Yes
	Eating Out	No
	Grocery Shopping	Yes
Transportation	Driving Frequency	Yes
	Vehicle	Yes
	Other Transportation	Yes
Goods & Services	Purchasing Philosophy	No
	Purchasing Frequency	Yes
	Types of Purchases	Yes
	Recycling	Yes
	Household Products	Yes
	Plastic Use	No
	Amount of Belongings	Yes

Out of 23 behavior categories resulting from specific behaviors identified by interviewees as being relevant to their environmental impact, nine were not addressed in the Global Footprint Network ecological footprint survey. This shows that there is a disconnect between the

ecological footprint survey and the range of behaviors people self-identify as pro-environmental in a semi-structured interview. As the table above shows, some behaviors that were identified in the interviews were not accounted for in the ecological footprint survey. This identifies a need for future research, described in the next chapter, to both improve the ecological footprint calculator and examine the behaviors identified in this study in more detail.

As a final step in the mixed method data analysis, the researcher cross-referenced the behaviors identified in Table 4.28 with the categories in Table 4.29 to see which behaviors that may significantly influence ecological footprint changes are accurately represented in the survey itself. Table 4.30 shows this comparison.

Table 4.30

Cross-Reference Between Behavior Categories, Positive Behaviors, and Global Footprint Network Ecological Footprint Survey

Behavior Category	Positive Behaviors	Is Category Covered in Ecological Footprint Calculator?
Water Conservation	● Conserves water ● Harvests rainwater ● Handwashes dishes ● Takes bucket showers ● Uses compost toilet	No
Solar	● Uses solar	Yes
Laundry	● Hang dries clothes ● Has efficient washing machine	No
Compost Toilet	● Uses compost toilet	No
Housing Upkeep	● Reduced housing upkeep	
Off-Grid Capabilities	● Designed non-toxic and off-grid home	Yes

Table 4.30 (cont'd)

Behavior Category	Positive Behaviors	Is Category Covered in Ecological Footprint Calculator?
Recycled Materials	• Upcycled and reclaimed resources for home	No
Miscellaneous	• Has multiple purposes for items	No
Driving Frequency	• Drives less / Drives further • Combines driving trips	Yes
Vehicle	• Drives a smaller, efficient car	Yes
Other Transportation	• Bikes most places	Yes
Purchasing Philosophy	• Purchases items intentionally • Uses "one in one out" purchasing approach • Conscious decisions to minimize waste	No
Types of Purchases	• Purchases less	Yes
Recycling	• Recycles more • Recycles, reuses, and repurposes items	Yes
Household Products	• Uses biodegradable products • Uses non-toxic products	Yes
Plastic Use	• Uses reusable corelle bowls • Uses reusable water bottles	No
Amount of Belongings	• Got rid of unused items before and after downsizing • Downsized wardrobe	Yes
Miscellaneous	• Repairs clothes • Uses more public spaces	No

This analysis identified which of the 113 behaviors found in the interviews may influence ecological footprint component changes more than others. Since the Global Footprint Network does not explicitly share which ecological footprint survey variables weigh more than others, this analysis was important to understand the potential weight of the behaviors identified in this study. This also showed that although there was a unique inventory of behaviors identified throughout the nine interviews, not all of these behaviors were accurately represented in the Global Footprint Network ecological footprint survey used in this study. A notable behavior category that is not represented in the survey is water conservation. This shows that there is a disconnect between the behaviors identified in the nine interviews and the behaviors addressed in the online survey based directly on questions from the Global Footprint Network ecological footprint calculator. However, two of the seven most popular ecological footprint calculators did include factors related to water conservation (Appendix A), introducing an important omission of the specific calculator used in this research. Ways to mitigate this disconnect in future research will be discussed in Chapter 5.

Based on the survey data, and confirmed by the interviews, the researcher found that there is a range of behaviors of which can have negative, neutral, or positive influences on changes in ecological footprints of tiny home downsizers. The analysis described in this chapter identified which behaviors, based on a mixture of the survey and interview data, potentially influence ecological footprint changes the most. It is important to note that these assumptions are based on the findings of this study, rather than a holistic life cycle analysis of behaviors. This data analysis also compared these behaviors to the ecological footprint calculator used in this survey to determine whether the survey accurately represented the behaviors identified in the

interviews and found multiple discrepancies between the two that need to be studied in future research.

The synthesis of data analyzed from the online survey and interviews were presented in Chapter 4 to answer the main research question and three sub-questions. Conclusions drawn from these findings are presented in Chapter 5 along with the implications of these findings and recommendations for the public and future researchers.

CHAPTER FIVE: CONCLUSIONS, IMPLICATIONS, & RECOMMENDATIONS

Chapter 5 discusses the conclusions of this study based on the data analyses and findings presented in Chapter 4. Several implications resulting from these conclusions are explored in this chapter, followed by recommendations to apply these conclusions to future research and practice in the field of sustainable residential construction.

Conclusions

This research aimed to investigate how downsizing to tiny homes can change individual behaviors to potentially reduce negative impacts of the housing sector. In establishing the point of departure for this research, no rigorous studies were found that critically examined the relationship between downsizing to a tiny home and one's environmental impact. Consequently, this research attempted to answer the overall research question that explored the relationship between ecological footprints and individual behaviors after downsizing to a tiny home. Three sub-questions provided specific data to answer this overarching research question. The following sections discuss the conclusions for each of these research sub-questions, followed by a synthesis of conclusions drawn from the sub-questions to present conclusions for the overall research question.

Research Sub-Question 1

The first research sub-question asked, "How does the average annual ecological footprint of tiny home downsizers compare to **a)** their ecological footprints in previous housing, and to **b)** national averages?". Based on the findings for this study, it can be concluded that there is a substantial difference in ecological footprints pre- and post-downsizing. Ecological footprints were decreased after downsizing to a tiny home, and both previous and current footprints of tiny home downsizers were smaller than the national average. This may indicate that this particular

population is exposed to a variety of factors that may make their footprints smaller than the average American. The changes in ecological footprint values signify that there was a substantial decrease in ecological footprints after downsizing to a tiny home from one's previous housing type.

These differences in ecological footprints show an immense reduction in the environmental impacts of the study participants. If downsizing was examined on a larger scale for more housing types, we could learn more about the dramatic reductions in environmental demands that relate to reducing home square footage. This will be discussed later in this chapter.

Research Sub-Question 2

The second sub-question examined changes in the five ecological footprint components after downsizing to a tiny home: food, housing, transportation, goods, and services. This question was answered using data from the online survey. On average across the respondents, none of the five ecological footprint components increased after downsizing to a tiny home. The researcher found that aside from the housing component, the transportation and goods components were the most positively influenced. However, the transportation component had the most instances of negative value changes when considering individuals instead of averages across the whole set of respondents.

This sub-question could be addressed in two ways, depending on the analysis of the findings, that produce slightly different results. One approach (average component value) showed that, except for the housing component, the transportation component was the most positively influenced. The other approach (individual participant impact) showed that, with the exception of the housing component, the goods component was the most positively influenced and the transportation component contained the most instances of negative changes for the

transportation value. Across the board, however, both approaches showed that none of the five ecological footprint components were negatively impacted when looking across the study population as a whole.

The tiny homes occupied by participants in this study incorporated more recycled building materials, solar technology, and energy-efficient designs than prior homes. According to the online survey, after downsizing, people reported more frequently eating less energy-intensive food products and adopt more environmentally-conscious eating habits, such as eating more locally and growing more of their own food. Participants reported traveling less by car, motorcycle, bus, train, and airplane, and driving more fuel-efficient cars than they did before downsizing. They also reported purchasing substantially fewer items, recycling plastic and paper more frequently, and generating less trash as a whole.

This study shows us that downsizing to a smaller home has the possibility to influence many components of one's lifestyle. However, although ecological footprint components are positively influenced overall after downsizing, there may be still a number of negative consequences. These are important to identify so that future work in the sustainable residential field can be reexamined to comprehensively reduce environmental impacts of housing in all ways.

Research Sub-Question 3

The last research sub-question asked what behaviors relate to changes in ecological footprints after downsizing to a tiny home. Interviews confirmed that there are a variety of behaviors that can influence an individual's ecological footprint and corresponding environmental impact. Based on the study results, 113 behaviors were identified that were identified by interviewees as having an influence on their environmental impact (Table 4.15). This study enabled the researcher to identify behaviors that were most common among the

interview participants, including conserving water, hang drying clothes, and using a compost toilet.

Although the Global Footprint Network ecological footprint calculator does not identify what behaviors quantitatively influence footprint changes, the researcher was able to determine which behaviors from the interviews had the potential to influence footprint changes. Table 4.27 identifies 31 behaviors that potentially contributed to footprint component changes of over 1.5 global hectares.

The researcher found that many of the behaviors and associated reasons were quite broad, and thus could be applied to other small housing types. For example, multiple individuals purchased less material items after downsizing due to extreme space constraints (Figures 4.14 - 4.18). This specific example could also be the case for micro apartments, mobile homes, and other types of smaller housing. Few behaviors were likely more possible in tiny homes than in other types of conventional housing. For instance, many individuals across housing types may purposefully conserve water; however, the use of a compost toilet is not common in many types of housing. Compost toilets are more common in tiny homes since their mobility makes it difficult to easily incorporate running water and connections to permanent potable water and wastewater systems.

Creating an inventory of behaviors helped the researcher to understand that many behaviors of various types can influence changes in footprints, and that living in a tiny home can encourage pro-environmental behaviors. It also helped the researcher to understand the discrepancy between identified behaviors and the ecological footprint calculator.

Primary Research Question & Overlapping Conclusions

This study looked to explore the relationship between changing ecological footprints and individual behaviors after downsizing to a tiny home of less than 500 square feet. The findings derived from this study clearly indicate that although there may be some negative environmental consequences of downsizing to a tiny home, the positive benefits outweigh the negative impacts, as evidenced by the reduced ecological footprints experienced by all 80 participants in this study. Even if a participant's transportation component was larger because they now drive an inefficient truck to tow their tiny home, they still experienced a smaller footprint overall because of the other pro-environmental behaviors they adopted.

The evidence from this study shows that downsizing not only reduces individual environmental impacts in the ecological footprint metric but also provides an opportunity for a lifestyle change that is focused on adopting pro-environmental behaviors. Examples from 113 behaviors identified in this study include purchasing fewer material items, reduced housing upkeep, and minimizing energy use within the home.

Although many of the behaviors identified in this study positively influenced the ecological footprints of the study participants, there were some behaviors that negatively influenced footprints. Some examples included having vehicles with lower fuel economies and washing clothes more often. These negative consequences of downsizing to a tiny home show that one's ecological footprint will not necessarily be reduced in every aspect of life. Identifying these potentially negative consequences can benefit those who are looking to improve the design and function of tiny homes and other small, efficient housing types.

Through the interviews, the researcher found that reducing one's environmental impact is a goal that can be pursued over multiple years, or even decades. Many interview participants

shared that they have made purposeful changes in their lives to live more environmentally consciously, and that their decision to downsize into a tiny home was the culmination of their lifestyle changes. Some participants started this process through education, friend or family influences, or on their own accord.

The researcher also looked for relationships between ecological footprint values and characteristics of the study participants. This approach showed that those who downsized for environmental reasons were more likely to experience smaller footprints than those who did not downsize for environmental reasons; however, even participants who downsized for non-environmental reasons experienced a decrease in their footprints. However, while ecological footprints were consistently reduced for the study population, square footage reduction did not reliably predict reductions in ecological footprint. The analysis also showed that the mobility of one's tiny home did not appear to have a consistent impact on ecological footprints. Finally, the researcher found that those between the ages of 45 and 54, those who made between $40,000-$49,999, those who downsized from duplex or buildings with 2-4 units, and those who lived in their tiny homes for between 6 and 7 years had the lowest ecological footprints.

The overall conclusions from this study are as follows:

1) 100% of downsizers in the study demonstrated an overall positive reduction in ecological footprint.
2) On average, ecological footprints were reduced by about 45% after living in a tiny home for a year or more.
3) All five footprint components (food, housing, transportation, goods, and services) were reduced when looking across the study population as a whole.

4) There were approximately six times as many positive behaviors mentioned as negative behaviors while living in a tiny home.
5) The percent reduction in home square footage due to downsizing was not a reliable predictor of ecological footprint changes.
6) Ecological footprint calculators do not account for all pro-environmental behaviors.

The conclusions of this study provide a greater understanding of how downsizing into a tiny home changes one's behaviors to positively influence their ecological footprint, and the potential for improvement in both the tiny home and sustainable residential construction fields. Implications of these conclusions will be explored later in this chapter.

Research Contributions

This study resulted in a number of distinct research contributions, including:

1) An assessment of the relative reach of various tiny home occupant identification sources (Figure 3.3),
2) A detailed comparison of seven online ecological footprint calculators (Appendix A),
3) An inventory of tiny home occupants' behaviors that influence environmental impacts (Table 4.15),
4) Measured ecological footprints pre- and post-downsizing of 80 tiny home occupants across the United States (Appendix W).

These contributions work in various ways to fill gaps in the knowledge base to understand how ecological footprints can change after downsizing to a tiny home.

Before this study, no one had assessed the various ways to contact tiny home occupants. The researcher found that online recruitment strategies through Facebook were the most successful. While this assessment is not necessarily comprehensive, based on this contribution,

future researchers now have a set of tiny home occupant identification sources that could be used to reach out to the same population for future research.

Comparison of ecological footprint calculators is beneficial to understand which footprint calculators are the most comprehensive and appropriate for measuring footprints of individuals who have downsized. We also now understand how ecological footprint tools are not necessarily the perfect fit to look at downsizing in a high level of detail. Specifically, behaviors that were not included in the footprint calculator were provided in Table 4.30 to identify ways in which it could be further improved to address the specific phenomenon of downsizing to a tiny home.

The inventory of behaviors and measured footprints of 80 tiny home downsizers provides both a quantitative and qualitative point of reference for tiny home advocates and contributes a rigorous academic study to the sustainable residential sector of this specific housing type.

Table 5.1 summarizes the intellectual merit and impact for each of the contributions.

Table 5.1

Intellectual Merit and Impacts of the Research Contributions

Contribution	Intellectual Merit	Impact
Assessment of tiny home occupant identification sources	Supplies a list of successful recruitment strategies	Assessment can guide recruitment strategies of subsequent research efforts focused on tiny home occupants
Comparison of online ecological footprint calculators	Provides a comparison of which ecological footprint calculators cover the most material and are most relative to tiny homes	May lead to future improvements of existing ecological footprint calculators
Inventory of tiny home occupants' self-reported environmental behaviors	Comparison of behaviors to changes in ecological footprint metric	Inventory is a starting point for future studies related to behaviors that impact the environment; inventory is also a means of improving future ecological footprint calculators to better match pro-environmental behaviors

Table 5.1 (cont'd)

Contribution	Intellectual Merit	Impact
Measured ecological footprints of 80 tiny home occupants in the U.S.	A systematic measurement of environmental impact with tiny homes serving as the intervention	A comparative benchmark for subsequent research efforts

In summary, the contributions of this research offer an initial rigorous foothold in a relatively unstudied realm of tiny homes. Understanding the relationship between downsizing and changes in ecological footprints allows not only the further discovery of the benefits of tiny homes themselves but also about the experience of downsizing and how it impacts environmental behaviors. In other words, the problem of unsustainable housing trends can now begin to be tackled to achieve long-term environmental sustainability. The most important achievement of this research is that we now have a baseline for future discussion and improvement in both the tiny home field.

Implications

Before discussing the future research recommendations, it is important to review the broader implications of this research and the overall impact each contribution can have towards changing the future of the residential sector. The implications of each research question are discussed next, followed by a discussion of general implications.

Research Sub-Question 1

The first research sub-question asked about ecological footprint changes pre- and post-downsizing, compared to national averages. The findings and conclusions from this sub-question imply that downsizing has the potential to significantly contribute to reductions in ecological footprints.

All 80 study participants experienced smaller ecological footprints after downsizing, indicating that tiny homes can be a vehicle for reducing negative environmental impacts of the residential sector. Additionally, both previous and current footprint values were smaller than the national average. Stakeholders in both the tiny home field and general residential field can use this study to explore ecological footprint reductions after downsizing, which can have the potential to influence policy and practice related to small, efficient home types.

Research Sub-Question 2

The second sub-question asked what ecological footprint components changed after downsizing. The findings and conclusions for this sub-question showed that all footprint components (food, housing, transportation, goods, and services) were reduced across the majority of survey respondents. This implies that downsizing has the ability to influence many lifestyle variables and can encourage occupants to live more environmentally-friendly.

These findings provide stakeholders with an opportunity to examine housing and its association with other lifestyle variables. For instance, the relationship between housing and changing purchasing behaviors can be examined in more detail to understand the implications of footprint component changes.

Research Sub-Question 3

The last research sub-question explored what details influenced changes in the ecological footprints of tiny home downsizers. This study implied that many behaviors of various types can influence changes in footprints, and that living in a tiny home can encourage pro-environmental behaviors.

Creating an inventory of behaviors also provided a basis to understand what behaviors can negatively influence one's ecological footprint and overarching environmental impact after

downsizing to a tiny home. This is especially important to identify negative behaviors and unanticipated consequences of downsizing so that future development in the tiny home and sustainable residential fields can be adapted with new technologies and design approaches to mitigate or discourage these negative behaviors. For example, two interview participants shared that they currently recycle less due to limited space within their tiny home to store recyclable items and limited access to local recycling services. By identifying this negative behavior, future tiny home designs could be reconceptualized to incorporate more ample recycling storage. Recycling facilities could also be urged to reapportion their services to more rural areas where tiny home occupants may more frequently dwell.

Environmental issues are often rooted in human behavior. This study showed that in addition to house size and design, individuals have the power to contribute to sustainability by adopting pro-environmental behaviors. However, human behaviors are not dependent on individual motivations alone. Many external factors may influence pro-environmental behaviors, such as the availability and quality of recycling facilities, quality of available public transportation, and availability of local goods such as organic produce. Therefore, it is important to consider not only internal factors that may reduce one's environmental impact, but also external lifestyle factors that may inhibit one's ability to effectively lower impact. Additionally, there are some pro-environmental behaviors that may require a higher financial cost compared to conventional practice, such as purchasing organic food and household items versus non-organic options. That said, there are also environmental behaviors that often cost less than conventional options when considered from a lifecycle perspective, such as reduced purchasing of material items or using public transportation. Therefore, while cost can be a barrier to adoption of some

beneficial behaviors, it does not necessarily preclude other behaviors that could also influence overall ecological footprints.

Overall Research Question

This research aimed to explore the relationship between changing ecological footprints, individual behaviors, and downsizing to a tiny home. The findings and conclusions from this study convey that downsizing is an important choice with significant implications for reducing ecological footprints and encouraging pro-environmental behaviors. While downsizing to tiny homes would not completely eliminate resource consumption across the population, it is a step in the right direction to get us where we need to be to mitigate the negative impacts of the residential sector. Therefore, tiny homes are a mechanism for reducing negative impacts within the housing sector.

This research identified a number of potentially negative environmental consequences of downsizing to a tiny home, including driving more, recycling less, eating out more often, and washing clothes more. While these negative consequences do not apply to all study participants, they emerged in multiple instances. They are important to discuss so that future work related to this research can work towards applying interventions to change behaviors and their negative results. For example, urban building codes can be reassessed to allow for tiny homes and minimize the traveling burdens of current tiny home downsizers who are forced to move out of urban areas to legally reside in their tiny homes.

Recommendations

Recommendations for Researchers

This research was an exploratory investigation into the sustainable residential sector and the relatively uncharted field of tiny homes. As such, it has served to provide additional insight

into how downsizing to a tiny home changes one's environmental impact by measuring occupant's ecological footprints. Delving into this unexplored field was a difficult challenge because there is little academic attention on tiny homes, but allowed the researcher to use exploratory research methods. This study ignited a lot of excitement from the tiny home community. As such, recommendations are made for future researchers to focus on furthering this understanding between living in tiny homes and reducing environmental impacts, along with providing comprehensive studies that explore solutions to problems currently facing the tiny home movement.

One of the barriers to research in this field is the fact that many tiny homes "fly under the radar" to avoid being subject to local zoning and code requirements. This makes it extremely difficult to know, or even estimate, the total number of tiny home occupants in the United States. It also presents challenges when trying to reach these individuals to request their participation. Even if there were an official national registry for tiny homes, many would not list their homes for fear that local enforcers would be able to find their homes and enforce zoning and code requirements. One possible solution for this would be for a researcher to develop a comprehensive inventory of tiny home occupants in the United States that protects the privacy of the occupants themselves. This would enable future researchers to have a reliable source of data to recruit research participants beyond what this study contributed.

Ethnography is a research method where researchers observe and interact with study participants in their real-life environment. This research method could potentially provide a more detailed look at tiny home living and changing ecological footprints than the online ecological footprint survey that was used in this research, and could help reduce self-reporting bias. This approach would require a researcher to devote an extended amount of time to each study

participant to fully understand their environment, behaviors, and any influencing factors. The second phase of this research included interviews that were conducted by phone. This approach was the most sensible in regard to time and resources available to the researcher. However, interviews in person could potentially lead to a more detailed understanding by the researcher of the occupant behaviors. For instance, they might have certain behaviors of which they are unaware, which might be better captured using other data collection techniques.

Additionally, to understand what behaviors are truly positive or negative from an ecological standpoint requires a more detailed quantitative analysis than this study provided. For example, a researcher could conduct a holistic life-cycle assessment on a variety of behaviors to determine which most positively or negatively impact ecological footprints. A higher resolution tool, like a life cycle analysis of behaviors, would help to determine which are in fact positive or negative behaviors. For instance, a behavior like eating out more often could be examined in more detail to determine whether this study's classification of this being a negative behavior is correct after looking at the entire life cycle analysis of this behavior versus cooking at home. Another example is having less clothes which was identified as a positive behavior in relation to environmental impact. Having less clothes potentially means washing clothes more and requiring more water and energy. As such, a detailed analysis to accurately assess the true impacts of these behaviors would be a logical next step to build off this study.

In line with the previous suggestion, this research identified a number of negative consequences of downsizing to a tiny home, including driving more and recycling less. There is a need to explore solutions to these negative consequences, including both tiny home designs and policy changes that may affect them. This could positively influence many stakeholders in the tiny home field. Furthermore, the raw data for this study (Appendix L) included open-ended

responses for the 80 survey respondents that were not necessary to analyze in detail to answer the research questions of this study. Subsequent research efforts could examine this additional data to look for trends on the tiny home occupant population.

It would be extremely relevant to look at ecological footprint changes, behaviors, and reasons for behaviors after downsizing to other housing types beyond just tiny homes. Tiny homes represented the extreme of downsizing, but it could be important to understand how downsizing to a micro apartment, for example, impacts an individual's footprint. Since many of the behaviors and reasons for behaviors identified in this study were fairly broad, these findings have the potential to be applied to other types of housing. This exploration would help researchers understand the environmental benefits of downsizing in general, not only limited specifically to tiny homes.

As also discussed in Chapter 2, the Global Footprint Network Ecological Footprint calculator was found in this study to not be 100% comprehensive, as it does not cover every possible influence of one's encompassed ecological footprint. Additionally, the calculator questions used in this study were not universally applicable to all humans and is rather culturally tailored to developed countries. To improve the comprehensiveness, starting this year (2019), the Global Footprint Network is launching "The Ecological Footprint Initiative", which is a partnership between the Global Footprint Network and York University in Toronto, Canada (Global Footprint Network, 2019b). The goal of this initiative will be for researchers to further develop the methodology and improve the data behind the current ecological footprint calculator. This study, which used the current calculator to measure the ecological footprints of tiny home downsizers, could be redone with the redeveloped calculator once it is complete.

This research also identified the limitations of the ecological footprint calculator tool in regards to studying the specific phenomenon of downsizing to a tiny home. In Chapter 4, the researcher identified multiple behaviors identified in the interviews that were not accurately represented in the ecological footprint calculator tool. This means there is a good possibility that the footprint calculator did not capture all of the significant behaviors related to downsizing, and that there is certainly some room for improvement to the calculator itself, presenting a potential exploration of future research. And since it did not capture everything that arose in the interviews, the actual footprints of tiny home downsizers could potentially be even smaller than they were measured in this study. Therefore, this study could be conducted again with a higher resolution tool such as New Ecological Paradigm (NEP) scale, as described in Chapter 2, to measure environmental views and internal mindset changes after downsizing.

Another recommendation for researchers would be to answer the research questions of this study on an international scale. This study only included individuals who currently live in the United States; however, the findings are likely to be different when examining other cultures. A spin off from this research could be to answer the following question: "After downsizing to a tiny home (less than 500 square feet), what is the relationship between changing ecological footprints and individual behaviors on a global scale?". Based on the average square footage of homes in respective countries, the tiny home maximum requirement may need to be adjusted.

Since the field of tiny homes has been relatively unexplored before this study, it is important to share several lessons learned so that future research in this area can continue to be productive. For example, tiny homes have received a lot of attention from the media in recent years. Many tiny home occupants have expressed frustration with the amount of interest from the general public, since it often restricts their privacy and time. Therefore, for future research, it is

especially important to consider this concern when approaching tiny home occupants. Their time and privacy must be respected, and researchers should try to be as accommodating to their schedules as possible and ensure that any identifying information associated with the tiny home occupants will be coded and not shared with the public.

Since internet use has become the norm for most in the United States (Statistica, 2019), the online recruiting approach used in this research was especially beneficial. The tiny home online community, in particular, is relatively active on the internet. Had the researcher recruited in person, this research study would likely have had fewer participants and it would have required more time and resources to identify and recruit possible participants.

The researcher also discovered that tiny home occupants enjoy discussing their tiny homes, which lent itself to a high response rate (75%) when requesting interview participants from the survey population and a high completion rate (94%) of the online survey. The downside of this enthusiasm, however, is that some discussions may go off-topic and become irrelevant to the research questions. If a study such as this employs a transcription-based approach to analyze interviews, there may be a lot of irrelevant information. It is up to the researcher to either keep the interviews on track, transcribe every portion of the interview even if some portions are irrelevant, or clearly define how to decide what is not relevant and not transcribe those portions.

Recommendations for Practice

Tiny homes face strict regulations by state and local zoning and build codes. While the 2018 International Residential Code (IRC) was updated to include building code information on tiny homes, local jurisdictions have the power to choose to follow the IRC regulations or not. With the exception of a few cities and counties, many jurisdictions require livable dwelling units to be at least 1,000 square feet, making it difficult for tiny homes to legally reside in many areas

of the United States (Nonko, 2016). This research identified ways in which tiny home living can dramatically reduce one's ecological footprint. As such, zoning ordinances and building codes that require minimum floor size standards and other relevant building codes should be reexamined to allow for tiny homes.

This research also presented a need to explore a number of policies related to reduction of individual environmental impacts. These potential policies investigate the ways that individual behaviors and housing choices can be leveraged to reduce the environmental impact of the building sector. To improve a broad range of environmental impacts, policies that reverse the trend of large homes, or ones that even slightly decrease home sizes, could be significant in reducing the environmental demands of the residential sector. Policy models that reduce the costs of pro-environmental behaviors (such as purchasing efficient home appliances) and increase costs of negative environmental behaviors (such as gasoline use) have the potential to help encourage environmentally-sustainable behaviors on a large scale. Other policies that enable those in rural areas to achieve environmentally-positive behaviors could help improve the environmental impacts of those in rural areas. Additional policies could be explored to address one possible cause of the issue-- such as implementing environmental education into core curriculums throughout K-12 education to increase public knowledge of environmental issues. Children could be taught, at an early age, ways to effectively reduce their environmental impact. For example, children could learn that minimizing the frequency of purchasing could have a greater environmental benefit than recycling packaging products from one's purchases. Education can help to heighten awareness of the relationship between behaviors and environmental impacts. Education also helps to identify behavior alternatives and their pros and cons, such as hang drying laundry versus using a clothes dryer. It is important to note that this

research and the ecological footprint calculator used in this study is based on cultural heuristics and provides a best estimate of the impacts of certain behaviors on an individual's footprint. To comprehensively derive the environmental benefits mentioned earlier in this paragraph, more precise methods would need to be employed, such as a life cycle assessment of various behaviors.

In some areas of the country, such as Oregon and Washington, tiny home communities are being established as affordable housing solutions for the homeless. Tiny homes also have the opportunity to serve as disaster relief solutions in areas where temporary, transitional housing is needed. These options should be explored in more detail to determine the feasibility and practicality of them. The environmental impacts of tiny homes as an affordable or disaster-relief housing solution could also be compared to traditional housing options like shelters and FEMA trailers.

As technology advances, tiny homes may even be designed and built to be net zero energy homes. Multiple interview participants expressed interested in this concept. Christian et al. (2006) provide a list of valuable lessons learned from building a net zero energy 1,060 square foot home that may be used to help tiny home builders. Boyd and Clouston (2004) offer design solutions for a 736 square foot passive solar house. Examples such as these can be used to further the advancement of innovative, efficient tiny home designs.

Lastly, this study suggests a need to develop a systematic approach for comprehensively identifying, assessing, and changing environmentally-related behaviors. This would help individuals who are trying to reduce their environmental impact to have the ability to determine what behaviors are most greatly influencing their impact. By adopting pro-environmental behaviors, individuals can promote environmental sustainability. Individually-tailored solutions

would enable individuals to take measures to comprehensively reduce their environmental impact.

Hypothetical Impact Studies

With the data from this study, one could do a variety of hypothetical impact studies to determine the potential environmental benefits of downsizing to a tiny home on a large scale and show the potential significance of this research. This could be calculated based on a variety of factors, including ecological footprint values, diet changes, transportation habits, recycling frequencies, and purchasing behaviors. To provide an example, the researcher sought to find out what the potential environmental benefits would be if 10% of Americans downsized to a tiny home. There were approximately 327 million people in the United States at the time of this study (Worldometers, 2019). The ecological footprint of the average American is 8.4 gha while the average ecological footprint of the 80 tiny home downsizers in this study was 3.87 gha. One global hectare is equal to 2.471 acres of land.

Based on this data, and assuming that all future tiny home downsizers will have an ecological footprint of 3.87 gha, the potential environmental savings can be calculated by determining how many acres worth of land could be saved. The equation below (Figure 5.1) shows how one can calculate the number of acres of biologically-productive resources that could be saved if a small percentage of Americans downsized to a tiny home.

$$[(Average\ American's\ footprint - Average\ tiny\ home\ downsizers' footprint) \times Acreage\ conversion] \times (U.S.Population \times 10\%\ of\ Americans) = Potential\ acres\ saved$$

$$[(8.4\ gha - 3.87\ gha) \times 2.471] \times (327{,}000{,}000 \times .10) = 366{,}031{,}701\ acres\ saved$$

Figure 5.1. Equation of hypothetical Earth impact.

As the equation shows, these savings are incredibly substantial; 366 million acres worth of biologically productive resources could potentially be saved if 10% of Americans downsized to a tiny home. This analysis is provided to illustrate an example of the types of inquiries that could be explored by further expanding on the data provided by this study. Hypothetical impact studies such as this may motivate individuals to adopt more environmentally-conscious behaviors.

General Implications

Despite the negative stigma of tiny homes that counter our current culture of consumption, tiny homes offer potentially affordable, more sustainable housing solutions for those with various needs. Tiny homes offer the opportunity for a reduced ecological footprint, decreased maintenance, little to no debt, lower taxes, and self-sufficiency. Tiny homes can also provide housing for a range of needs, including needs of the elderly, those in need of affordable housing, and those who are environmentally conscious, students, or who are seeking a mobile lifestyle.

The tiny home movement is gaining momentum for its allure of reduced environmental impact, reduced costs, and a simpler lifestyle. It is estimated that the tiny home global market will grow approximately 7%, or by $5.18 billion between 2018 and 2022 (Technavio, 2018). Tiny homes offer an alternative to the unsustainable and cost-intensive construction of conventional homes in the United States. Tiny homes built in urban areas as accessory dwelling units require little from existing infrastructure. Tiny homes also require less lumber and other building materials. Tiny homes may not appeal to everyone, but they are a practical, effective solution for many.

Prior to this research, little was known about tiny homes from a research standpoint. As evidenced by this study, tiny homes offer the opportunity for occupants to substantially decrease their environmental impact over time. Although this study solely focused on tiny home occupants in the United States, many of these implications could likely be relevant in other countries and to other types of housing.

The majority of greenhouse gas emissions associated with a home's life span are attributed to electricity and fuel consumption. The literature showed (and this study confirmed) that the largest environmental benefits of downsizing included reduced electricity and fuel use by having less space to heat and cool, less lighting, fewer and smaller appliances, and less additional electric equipment. Because of their small size, tiny homes are often built from recycled materials, further reducing their resource consumption.

There are numerous ways by which an individual can reduce their environmental impact within a home. This study examined individuals who downsized to a tiny home under 500 square feet; many who did so to reduce their environmental impact. These individuals adopted pro-environmental behaviors that significantly contributed to reducing their ecological footprints to achieve long-term environmental sustainability. The challenge, moving forward, will be to understand the factors that both threaten and facilitate pro-environmental behaviors so that we can promote the adoption of these behaviors to achieve environmental sustainability in the residential sector and on a global scale.

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DEFINITION OF TERMS

Consumption components (or consumption categories)

> Ecological Footprint analyses can allocate total Footprint among consumption components, typically Food, Shelter, Mobility, Goods, and Services—often with further resolution into sub-components. Consistent categorization across studies allows for comparison of the Footprint of individual consumption components across regions, and the relative contribution of each category to the region's overall Footprint. To avoid double counting, it is important to make sure that consumables are allocated to only one component or sub-component. For example, a refrigerator might be included in either the food, goods, or shelter component, but only in one. (Global Footprint Network, 2019c)

Conversion factor

> A generic term for factors which are used to translate a material flow expressed within one measurement system into another one. For example, a combination of two conversion factors—"yield factors" and "equivalence factors"—translates hectares into global hectares. The extraction rate conversion factor translates a secondary product into primary product equivalents. (Global Footprint Network, 2019c)

Downsizing

> Refers to the act of reducing the square footage of one's home by at least half, in addition to lifestyle changes such as reducing material possessions and changing behaviors to accommodate this housing change.

Ecological Footprint

> A measure of how much area of biologically productive land and water an individual, population or activity requires to produce all the resources it consumes and to absorb the

waste it generates, using prevailing technology and resource management practices. The Ecological Footprint is usually measured in global hectares. Because trade is global, an individual or country's Footprint includes land or sea from all over the world. Without further specification, Ecological Footprint generally refers to the Ecological Footprint of consumption. Ecological Footprint is often referred to in short form as Footprint. (Global Footprint Network, 2019c)

Ecological Footprint Standards

Specified criteria governing methods, data sources and reporting to be used in Footprint studies. Standards are established by the Global Footprint Network Standards Committee, composed of scientists and Footprint practitioners from around the world. Standards serve to produce transparent, reliable and mutually comparable results in studies done throughout the Footprint Community. Where Standards are not appropriate, Footprint Guidelines should be consulted. (Global Footprint Network, 2019c)

Global hectare (gha)

Global hectares are the accounting unit for the Ecological Footprint and biocapacity accounts. These productivity weighted biologically productive hectares allow researchers to report both the biocapacity of the earth or a region and the demand on biocapacity (the Ecological Footprint). A global hectare is a biologically productive hectare with world average biological productivity for a given year. Global hectares are needed because different land types have different productivities. A global hectare of, for example, cropland, would occupy a smaller physical area than the much less biologically productive pasture land, as more pasture would be needed to provide the same biocapacity as one hectare of cropland. Because world productivity varies slightly from

year to year, the value of a global hectare may change slightly from year to year. See also hectare. (Global Footprint Network, 2019c)

Hectare

1/100th of a square kilometre, 10,000 square meters, or 2.471 acres. A hectare is approximately the size of a soccer field. See also global hectare. (Global Footprint Network, 2019c)

Life cycle analysis (LCA)

A quantitative approach that assesses a product's impact on the environment throughout its life. LCA attempts to quantify what comes in and what goes out of a product from "cradle to grave," including the energy and material associated with materials extraction, product manufacture and assembly, distribution, use and disposal and the environmental emissions that result. (Global Footprint Network, 2019c)

National Footprint Accounts

The central data set that calculates the Footprint and biocapacity of the world and more than 200 nations from 1961 to the present (generally with a three year lag due to data availability). The ongoing development, maintenance and upgrades of the National Footprint Accounts are coordinated by Global Footprint Network and its 80 plus partners. (Global Footprint Network, 2019c)

Tiny home

A livable dwelling unit under 500 square feet that is a full-time residence for its occupant(s) that can be either mobile or fixed on a permanent foundation. Sometimes referred to as a micro home, nano home, compact home, tiny dwelling, and extremely small home. In the context of this research, tiny homes are standalone and land-based.

Yield

The amount of regenerated primary product, usually reported in tons per year, that humans are able to extract per area unit of biologically productive land or water. (Global Footprint Network, 2019c)

Yield factor

A factor that accounts for differences between countries in productivity of a given land type. Each country and each year has yield factors for cropland, grazing land, forest, and fisheries. For example, in 2008, German cropland was 2.21 times more productive than world average cropland. (The German cropland yield factor of 2.21, multiplied by the cropland equivalence factor of 2.51 converts German cropland hectares into global hectares: one hectare of cropland is equal to 5.6 gha. (Global Footprint Network, 2019c)

APPENDICES

APPENDIX A:

Ecological Footprint Calculator Comparison (Coverage & Relativity)

HOUSING	Basic Building Information				Size of Home				Energy/ Utilities of Home									Design Elements		Occupant Habits				Purchasing Habits			Water Conservation				Misc.	Text in red: Relativity factors
Metric	Location of Home	Housing Type	Housing Material	Amount of Housing Material Consisting of Recycled Materials	# of People in Household	Size of Home	Number of Bedrooms	Number of Rooms in General	Existence of Electricity	Energy/Heating Source in Home	Access to Utility Bills	Amount of Electricity Used Per Year	Amount of Natural Gas Used Per Year	Amount of Heating Oil and Other Fuels Used Per Year	Amount of Water Used Per Year	Temperature of Home in Winter	Energy Efficiency of Home	Renewable Electricty Resources	Amount of Efficient Lightbulbs	Amount of Efficient Household Appliances	Habitual Habits of Turning Off Lights & Appliances	Generation of Trash	Amount of Recycling	Household Appliance Purchases	Furniture Purchases	Amount of Home Furnishings that are Second-Hand or Recycled	Amount Spent on House Structural Improvements	Existence of Water-Saving Devices	Length of Shower	Turning Off Tap While Brushing Teeth	How Often Toilets are Flushed	Purchase of Offsets for Carbon Emissions	TOTAL
Global Footprint Network Ecological Footprint Calculator / Earth Day Network Ecological Footprint Calculator		✓	✓		✓	✓			✓								✓	✓			✓	✓	✓	✓								**11**
World Wildlife Fund Network Ecological Footprint Calculator		✓			✓		✓			✓						✓	✓	✓			✓											**8**
Islandwood Ecological Footprint Calculator																					✓								✓	✓	✓		**4**

HOUSING	Basic Building Information				Size of Home				Energy/ Utilities of Home										Design Elements		Occupant Habits				Purchasing Habits			Water Conservation				Misc.	Text in red: Relativity factors
Center for Sustainable Economy Ecological Footprint Calculator	✓	✓		✓		✓				✓								✓	✓							✓						✓	**10**
The Nature Conservancy Ecological Footprint Calculator					✓	✓						✓	✓	✓	✓																		**6**
Eco Campus Ecological Footprint Calculator	✓				✓			✓										✓			✓							✓	✓	✓			**8**
Bioregional Ecological Footprint Calculator		✓			✓		✓			✓	✓						✓	✓	✓	✓	✓				✓		✓						**12**

FOOD	Components of Diet				Quality of Food					Food Waste			Miscellaneous			Text in red: Relativity factors
Metric	Amount of meat eaten	Amount of eggs/cheese/dairy eaten	Amount of vegetables eaten	Amount of snacks/drinks eaten	Amount of fresh, unpackaged food	Amount of processed, packaged food	Amount of local food	Where food comes from (farmers markets, supermarkets, restaurants, etc)	Purchase of certified organic/sustainably produced food	Compost	How much is wasted or thrown away	What is discarded after eating	Amount spent eating out	Amount of meals eaten per day	Grow any of own food/vegetables	TOTAL
Global Footprint Network Ecological Footprint Calculator / Earth Day Network Ecological Footprint Calculator	✓	✓	✓		✓		✓									**5**
World Wildlife Fund Network Ecological Footprint Calculator	✓	✓	✓				✓						✓			**5**
Islandwood Ecological Footprint Calculator	✓	✓	✓								✓	✓				**5**
Center for Sustainable Economy Ecological	✓	✓	✓				✓	✓	✓					✓	✓	**8**

FOOD	**Components of Diet**				**Quality of Food**					**Food Waste**			**Miscellaneous**			Text in red: Relativity factors
Footprint Calculator																
The Nature Conservancy Ecological Footprint Calculator	✓	✓	✓	✓												**4**
Eco Campus Ecological Footprint Calculator	✓					✓					✓					**3**
Bioregional Ecological Footprint Calculator	✓		✓				✓		✓	✓	✓		✓		✓	**8**

TRANSPORTATION	**Distance Traveled with Various Modes of Transportation**						**Vehicle Characteristics**				**Miscellaneous**	Text in red: Relativity factors
Metric	Primary mode of transportation	Distance traveled each day	Distance/hours traveled by car	Distance/hours traveled by train	Distance/hours traveled by bus	Distance/hours traveled by plane	Amount of cars owned	Fuel economy of car	Type of car (electric, hybrid, diesel, size of car)	Frequency of carpooling	Use of alternative modes of transportation (walking,	**TOTAL**
Global Footprint Network Ecological Footprint Calculator / Earth Day Network Ecological Footprint Calculator			✓	✓	✓	✓		✓		✓		**6**
World Wildlife Fund Network Ecological Footprint Calculator	✓		✓	✓	✓	✓			✓			**6**

TRANSPORTATION	Distance Traveled with Various Modes of Transportation						Vehicle Characteristics				Miscellaneous	Text in red: Relativity factors
Islandwood Ecological Footprint Calculator	✓	✓										**2**
Center for Sustainable Economy Ecological Footprint Calculator			✓	✓	✓	✓			✓	✓		**6**
The Nature Conservancy Ecological Footprint Calculator			✓	✓	✓	✓		✓	✓			**6**
Eco Campus Ecological Footprint Calculator	✓					✓	✓		✓			**4**
Bioregional Ecological Footprint Calculator			✓	✓	✓	✓				✓	✓	**6**

GOODS	Purchase Habits								Waste				
Metric	Spending Habits	Purchase of new household items	Purchase of new clothes items	Purchase of pet products	Purchase of phone and internet plans	Purchase of books, newspapers, and paper products	Purchase of biodegradable/non-toxic cleaning products	Appliance, Electronics, and Reading Material Purchases	Items that are recycled/composted	Where items are recycled/composted	Amount of garbage produced	Type of products (fair trade, second-hand, etc)	Text in red: Relativity factors
Global Footprint Network Ecological Footprint Calculator / Earth Day Network Ecological Footprint Calculator	✓	✓	✓			✓		✓	✓		✓		**7**
World Wildlife Fund Network Ecological Footprint Calculator		✓	✓	✓	✓				✓				**5**
Islandwood Ecological Footprint Calculator										✓		✓	**2**
Center for Sustainable Economy Ecological	✓		✓				✓		✓		✓		**5**

GOODS	**Purchase Habits**								**Waste**				
Footprint Calculator													
The Nature Conservancy Ecological Footprint Calculator	✓												**1**
Eco Campus Ecological Footprint Calculator	✓		✓						✓				**3**
Bioregional Ecological Footprint Calculator	✓	✓	✓			✓			✓		✓	✓	**7**

Coverage Scores

Metric	**Housing**	**Food**	**Transportation**	**Goods**	**TOTAL**
Global Footprint Network Ecological Footprint Calculator / Earth Day Network Ecological Footprint Calculator	11	5	6	7	**29**
World Wildlife Fund Network Ecological Footprint Calculator	8	5	6	5	**24**
Islandwood Ecological Footprint Calculator	4	5	2	2	**13**
Center for Sustainable Economy Ecological Footprint Calculator	10	8	6	5	**29**
The Nature Conservancy Ecological Footprint Calculator	6	4	6	1	**17**
Eco Campus Ecological Footprint Calculator	8	3	4	3	**18**
Bioregional Ecological Footprint Calculator	12	8	6	7	**33**

Metrics in **bold have the top three scores in terms of coverage

Relativity Scores

Metric	**Housing**	**Food**	**Transportation**	**Goods**	**TOTAL**
Global Footprint Network Ecological Footprint Calculator / Earth Day Network Ecological Footprint Calculator	8	2	1	3	**14**
Center for Sustainable Economy Ecological Footprint Calculator	6	3	0	3	**12**
Bioregional Ecological Footprint Calculator	5	3	1	3	**12**

APPENDIX B

Global Footprint Network Question Changes

Original Question (from Global Footprint Network)	Updated Questions for Survey Instrument
Which housing type best describes your home?	Which housing type best describes your tiny home? — What housing type did you downsize to a tiny house from?
What material is your house constructed with?	What material is your tiny house constructed with? — What material was your previous home constructed with?
How many people live in your household?	How many people live in your tiny home? — How many people lived in your previous house?
What is the size of your home?	How many square feet is your tiny home? — What was the square footage of where you lived previously?
Do you have electricity in your home?	Do you have electricity in your tiny home? — Did you have any electricity in your previous home?
How energy efficient is your home?	How energy efficient is your tiny home? — How energy efficient was your previous home?
What percentage of your home's electricity comes from renewable sources (either directly or through purchased green power)?	What percentage of your tiny home's electricity comes from renewable resources (either directly or through purchased green power)? —

	What percentage of your previous home's electricity came from renewable resources (either directly or through purchased green power)?
How often do you eat animal-based products?	How often do you eat animal-based products? — How often did you eat animal-based products when you lived in your previous home?
How often do you eat beef or lamb?	How often do you eat beef or lamb? — How often did you eat beef or lamb when you lived in your previous home?
How often do you eat pork?	How often do you eat pork? — How often did you eat pork when you lived in your previous home?
How often do you eat poultry?	How often do you eat poultry? — How often did you eat poultry when you lived in your previous home?
How often do you eat fish or shellfish?	How often do you eat fish or shellfish? — How often did you eat fish or shellfish when you lived in your previous home?
How often do you eat eggs, cheese, and/or dairy?	How often do you eat eggs, cheese, and/or dairy? — How often did you eat eggs, cheese, and/or dairy when you lived in your previous home?
How much of your diet is fresh, unpackaged foods?	How much of your diet is fresh, unpackaged foods? — In your previous housing, how much of your diet was fresh, unpackaged foods?
How much of your diet is locally grown or produced? (less than 320 kilometers/200 miles	How much of your diet is locally grown or produced? (less than 320 kilometers/200 miles

away)	away) — How much of your diet was locally grown or produced? (less than 320 kilometers/200 miles away)
How far do you travel by car each week? (as a driver or passenger)	How far do you travel by car each week (as a driver or passenger)? — While in your previous housing, how far did you travel by car each week (as a driver or passenger)?
How far do you travel by motorcycle each week? (as a driver or passenger)	How far do you travel by motorcycle each week (as a driver or passenger)? — While in your previous housing, how far did you travel by motorcycle each week (as a driver or passenger)?
How far do you travel each week by train?	How far do you travel each week by train? — While in your previous housing, how far did you travel each week by train?
How far do you travel each week by bus?	How far do you travel each week by bus? — While in your previous housing, how far did you travel each week by bus?
How many hours do you fly each year?	How many hours do you fly each year? — How many hours did you fly each year when you lived in your previous home?
What is the average fuel economy of the vehicles you use most often?	What is the average fuel economy of the vehicle you use most often? — What was the average fuel economy of the vehicle you used most often when you lived in your previous home?

When you travel by car, how often do you carpool?	When you travel by car, how often do you carpool? — When you traveled by car, how often did you carpool in your previous home?
How much do you recycle paper?	How much do you recycle paper? — How much did you recycle paper in your previous housing?
How much do you recycle plastic?	How much do you recycle plastic? — How much did you recycle plastic in your previous housing?
Compared to your neighbors, how much trash do you generate?	Compared to your neighbors, how much trash do you generate? — Compared to your neighbors, how much trash did you generate in your previous housing?
What comes closest to your annual new household furnishings purchases?	What comes closest to your annual new household furnishings purchases? — What came closest to your annual new household furnishings purchases when you lived in your previous home?
What comes closest to your monthly new clothing, footwear and/or sporting goods purchases?	What comes closest to your personal monthly new clothing, footwear and/or sporting goods purchases? — What came closest to your personal monthly new clothing, footwear and/or sporting goods purchases when you lived in your previous home?
How often do you purchase new household appliances?	How often do you purchase new household appliances? — How often did you purchase new household appliances when you lived in your previous home?

How often do you purchase new electronics and gadgets?	How often do you purchase new electronics and gadgets? — How often did you purchase new electronics and gadgets when you lived in your previous home?
How often do you purchase new books, magazines and newspapers?	How often do you purchase new books, magazines and newspapers? — How often did you purchase new books, magazines and newspapers when you lived in your previous home?

APPENDIX C

Inventory of Blogs Contacted

Blog Name	Blog Link
Tiffany the Tiny Home	https://www.tiffanythetinyhome.com/blog/
SHEDsistance	https://shedsistence.com/
Tiny House Build	https://tinyhousebuild.com/
Ethan Waldman's Tiny House On Wheels in Vermont	https://www.thetinyhouse.net/
A small life – living small and doing big things	http://asmalllife.com/
Fy Nyth	http://fynyth.blogspot.com/
Life in 120 Square Feet	http://www.120squarefeet.com/
ur Tiny Home Dream	http://tinyhomedream.net/
Living Large In Our Little House – Thriving in a Tiny House with Six Dogs, a Husband and One Remote	http://livinglargeinourlittlehouse.com/
A Terracotta Life	https://aterracottalife.com/
Rowdy Kittens	https://www.rowdykittens.com/
This Tiny House	http://thistinyhouse.com/
Tiny House of the South	http://tinyhouseofthesouth.com/
Unboxed	http://unboxedhouse.com/
Pad Tiny Houses	https://padtinyhouses.com/
Tiny House Giant Journey	https://tinyhousegiantjourney.com/
Our Tiny Cabin Project	http://www.ourtinycabinproject.com/
Towed Haul	http://prittsbob.tumblr.com/

APPENDIX D

Recruitment Email

Hi, there--
My name is Maria Saxton and I'm a Ph.D. student at Virginia Tech. I'm reaching out to you directly because I am working on a research study about tiny home downsizers and their ecological footprints. I came across your name <on the Tiny House Map or on a specific blog's name> and believe that you fit the criteria for my study.

Here's a bit about this study: We are looking for individuals who currently live full time in their tiny home to take an online survey that will measure both your current ecological footprint and your footprint in prior housing. The online survey takes between 15 and 20 minutes to complete, and questions are designed to ask about your current behaviors/lifestyle while living in your tiny home, followed by questions about your behaviors/lifestyle in your previous housing type.

Your cooperation in this research will enable researchers to understand the relationship between downsizing to a tiny home and an individual's resulting ecological footprint, and the results may help advocates of the tiny house movement position tiny homes as a comprehensive sustainable housing type and potentially impact policy change.

If you decide to contribute to this research, here is the link to the online survey, where you will also find more information about this study:
https://virginiatech.qualtrics.com/jfe/form/SV_8kA3KMa1UFCbMDr

There is no compensation for participation, however, you will be asked if you wish to receive your ecological footprint results once the data is analyzed. You will also have the ability to indicate if you would like to be considered in the next phase of research-- a phone interview.

If you have any questions, please feel free to ask. Thank you very much for your time and consideration!

Respectfully,
Maria Saxton

Virginia Tech, PhD Student
Environmental Design & Planning
BioBuild Fellow
Myers-Lawson School of Construction

APPENDIX E

Recruitment Flyer

Have you lived in a tiny home for over a year?
Are you interested in seeing how your ecological footprint has changed?
If so, please consider participating in this research!

Researchers at Virginia Tech are conducting a study to measure the ecological footprint of individuals *in the United States who have downsized to a tiny home and have lived in it full-time for over a year*. We are looking for people willing to take a 15-20 minute online survey on both their previous and current footprint. Thank you for your consideration!

Link to online survey:
https://virginiatech.qualtrics.com/jfe/form/SV_8kA3KMa1UFCbMDr

APPENDIX F

Pilot Study Survey Changes

Pre-Pilot Study Questions (includes GFN questions and demographic questions)	Comments from Pilot Study	Post-Pilot Study Questions
Would you like your survey results to be sent to you via email once it is analyzed? This may take up to three weeks.	None.	N/A
How did you hear about this research?	None.	N/A
What is your age?	None	N/A
How would you describe yourself?	Add option to pick multiple groups.	How would you describe yourself? (Choose one or more from the following racial groups)
Employment Status: I am currently…	Add option to pick multiple options.	Employment Status: I am currently… (please select all that apply)
If you are employed, what is your job title?	None.	N/A
If you were employed before living in your tiny home, what was your job title?	None.	N/A
What is your income?	Add "personal" and "total"	What is your personal total income?
What is your zip code?	None.	N/A
What was your zip code before you lived in your tiny home?	None.	N/A
Why did you decide to move into a tiny home?	None.	N/A

How long have you lived in your tiny home? (years and months)	None.	N/A
What kind of setting do you live in?	Add “primarily” in case some tiny homes are mobile	What kind of setting do you live in primarily?
What type of forums, if any, do you use to connect with others in the tiny home community?	None.	N/A
Which housing type best describes your tiny home? — What housing type did you downsize to a tiny house from?	None.	N/A
What material is your tiny house constructed with? — What material was your previous home constructed with?	Add “structurally” before constructed for clarification	What material is your tiny house structurally constructed with? — What material was your previous home structurally constructed with?
How many people live in your tiny home? — How many people lived in your previous house?	None.	N/A
How many square feet is your tiny home? — What was the square footage of where you lived previously?	Add request to estimate to the best of one’s ability.	How many square feet is your tiny home? Please estimate as best as you can. — What was the square footage of where you lived

		previously? Please estimate as best as you can.
Do you have electricity in your tiny home? — Did you have any electricity in your previous home?	Add if this includes both renewable and non-renewable electricity.	Do you have electricity (renewable and/or non-renewable) in your tiny home? — Did you have any electricity (renewable and/or non-renewable) in your previous home?
How energy efficient is your tiny home? — How energy efficient was your previous home?	None.	N/A
What percentage of your tiny home's electricity comes from renewable resources (either directly or through purchased green power)? — What percentage of your previous home's electricity came from renewable resources (either directly or through purchased green power)?	None.	N/A
Is there anything else you would like to add about your tiny home or previous housing type?	None.	N/A
How often do you eat animal-based products? — How often did you eat animal-based products when	None.	N/A

you lived in your previous home?		
How often do you eat beef or lamb? — How often did you eat beef or lamb when you lived in your previous home?	None.	N/A
How often do you eat pork? — How often did you eat pork when you lived in your previous home?	None.	N/A
How often do you eat poultry? — How often did you eat poultry when you lived in your previous home?	None.	N/A
How often do you eat fish or shellfish? — How often did you eat fish or shellfish when you lived in your previous home?	None.	N/A
How often do you eat eggs, cheese, and/or dairy? — How often did you eat eggs, cheese, and/or dairy when you lived in your previous home?	None.	N/A
How much of your diet is fresh, unpackaged foods? — In your previous housing, how much of your diet was fresh, unpackaged foods?	Include if this is averaged over every season. Ask about percentage instead of “how much”	On average, considering every season, what percent of your diet is fresh, unpackaged foods? — In your previous housing, on

		average and considering every season, what percent of your diet was fresh, unpackaged foods?
How much of your diet is locally grown or produced? (less than 320 kilometers/200 miles away) — How much of your diet was locally grown or produced? (less than 320 kilometers/200 miles away)	Include if this is averaged over every season. Ask about percentage instead of "how much	On average, considering every season, what percent of your diet is locally grown or produced? (less than 320 kilometers/200 miles away) — On average, considering every season, what percent of your diet was locally grown or produced? (less than 320 kilometers/200 miles away)
Are your eating habits influenced by your choice to live in a tiny home?	None.	N/A
Is there anything else you would like to add about your eating habits while living in a tiny home or your previous housing type?	None.	N/A
How far do you travel by car each week (as a driver or passenger)? — While in your previous housing, how far did you travel by car each week (as a driver or passenger)?	Include that this should be an averaged estimate.	In an average week, how far do you travel by car (as a driver or passenger)? — While in your previous housing, in an average week, how far did you travel by car (as a driver or passenger)?
How far do you travel by motorcycle each week (as a driver or passenger)? — While in your previous housing, how far did you travel by motorcycle each week (as a driver or passenger)?	Include that this should be an averaged estimate.	In an average week, how far do you travel by motorcycle (as a driver or passenger)? — While in your previous housing, in an average week, how far did you travel by motorcycle (as a driver or passenger)?

How far do you travel each week by train? — While in your previous housing, how far did you travel each week by train?	Include that this should be an averaged estimate.	In an average week, how far do you travel by train? — While in your previous housing, in an average week, how far did you travel by train?
How far do you travel each week by bus? — While in your previous housing, how far did you travel each week by bus?	Include that this should be an averaged estimate.	In an average week, how far do you travel by bus? — While in your previous housing, in an average week, how far did you travel by bus?
How many hours do you fly each year? — How many hours did you fly each year when you lived in your previous home?	Include that this should be an averaged estimate.	How many hours do you fly in an average year? — How many hours did you fly in an average year when you lived in your previous home?
What is the average fuel economy of the vehicle you use most often? — What was the average fuel economy of the vehicle you used most often when you lived in your previous home?	None.	N/A
When you travel by car, how often do you carpool? — When you traveled by car, how often did you carpool in your previous home?	None.	N/A
Are your traveling habits influenced by your choice to live in a tiny home?	None.	N/A
Is there anything else you	None.	N/A

would like to add about your traveling habits while living in a tiny home or your previous housing type?		
How much do you recycle paper? — How much did you recycle paper in your previous housing?	Include that this is compared to throwing paper away.	How much do you recycle paper as opposed to throwing it away? — How much did you recycle paper in your previous housing as opposed to throwing it away?
How much do you recycle plastic? — How much did you recycle plastic in your previous housing?	Include that this is compared to throwing plastic away.	How much do you recycle plastic as opposed to throwing it away? — How much did you recycle plastic in your previous housing as opposed to throwing it away?
Compared to your neighbors, how much trash do you generate? — Compared to your neighbors, how much trash did you generate in your previous housing?	None.	N/A
Are your recycling habits influenced by your choice to live in a tiny home?	None.	N/A
Is there anything else you would like to add about your recycling habits while living in a tiny home or your previous housing type?	None.	N/A
What comes closest to your annual new household furnishings purchases?	None.	N/A

— What came closest to your annual new household furnishings purchases when you lived in your previous home?		
What comes closest to your personal monthly new clothing, footwear and/or sporting goods purchases? — What came closest to your personal monthly new clothing, footwear and/or sporting goods purchases when you lived in your previous home?	None.	N/A
How often do you purchase new household appliances? — How often did you purchase new household appliances when you lived in your previous home?	None.	N/A
How often do you purchase new electronics and gadgets? — How often did you purchase new electronics and gadgets when you lived in your previous home?	None.	N/A
How often do you purchase new books, magazines and newspapers? — How often did you purchase new books, magazines and newspapers when you lived in your previous home?	None.	N/A
Are your purchasing habits	None.	N/A

influenced by your choice to live in a tiny home?		
Is there anything else you would like to add about your lifestyle and habits while living in a tiny home or your previous housing type?	None.	N/A

Suggested additional questions from pilot study:

- Is your tiny home mobile, semi-mobile, or a permanent structure?
- On average, considering every season, what percent of your diet do you produce yourself?
- On average, considering every season, what percent of your diet did you produce yourself?
- Do you make an effort to try to buy second-hand goods when possible?
- Did you make an effort to try to buy second-hand goods when possible in your previous home?

APPENDIX G

Expert Panel Selection Criteria

Expert Panelist	Degree	Research Interest/ Specialties	Familiarity with Tiny Home Movement
Ex.Pan.1	Ph.D. in Architecture	Environmental design	Currently lives in a tiny home
Ex.Pan.2	Ph.D. in Architectural Studies	Human behaviors in the built environment	Past design projects
Ex.Pan.3	Ph.D. in Education	Qualitative interviews	Personal interest

APPENDIX H

Expert Panel Review Survey Changes

Post-Pilot Study Questions	Comments by Expert Panel	FINAL Questions for Survey Instrument
Would you like your survey results to be sent to you via email once it is analyzed? This may take up to three weeks.	None.	Would you like your survey results to be sent to you via email once it is analyzed? This may take up to three weeks.
How did you hear about this research?	ExPan2: Add "study" after "research"	How did you hear about this research study?
What is your age?	None.	What is your age?
How would you describe yourself? (Choose one or more from the following racial groups)	None.	How would you describe yourself? (Choose one or more from the following racial groups)
Employment Status: I am currently… (please select all that apply)	None.	Employment Status: I am currently… (please select all that apply)
If you are employed, what is your job title?	ExPan1: Add "field"	If you are employed, what is your job title and field?
If you were employed before living in your tiny home, what was your job title?	ExPan1: Add "field"	If you were employed before living in your tiny home, what was your job title and field?
What is your personal total income?	None.	What is your personal total income?
What is your zip code?	None.	What is your zip code?
What was your zip code before you lived in your tiny home?	None.	What was your zip code before you lived in your tiny home?
Why did you decide to move into a tiny home?	ExPan2: Does order of importance matter?	Why did you decide to move into a tiny home? Please list

	ExPan3: Give directions for them to list in the order that you prefer.	reasons in order of importance.
How long have you lived in your tiny home? (years and months)	None.	How long have you lived in your tiny home? (years and months)
Is your tiny home mobile, semi-mobile, or a permanent structure?	None.	Is your tiny home mobile, semi-mobile, or a permanent structure?
What kind of setting do you live in primarily?	None.	What kind of setting do you live in primarily?
What type of forums, if any, do you use to connect with others in the tiny home community?	None.	What type of forums, if any, do you use to connect with others in the tiny home community?
Which housing type best describes your tiny home? — What housing type did you downsize to a tiny house from?	None.	Which housing type best describes your tiny home? — What housing type did you downsize to a tiny house from?
What material is your tiny house structurally constructed with? — What material was your previous home structurally constructed with?	None.	What material is your tiny house structurally constructed with? — What material was your previous home structurally constructed with?
How many people live in your tiny home? — How many people lived in your previous house?	ExPan1: What if this number fluctuates? ExPan3: Add “regularly.”	How many people live in your tiny home on a regular basis? —

		How many people lived in your previous house on a regular basis?
How many square feet is your tiny home? Please estimate as best as you can. — What was the square footage of where you lived previously? Please estimate as best as you can.	None.	How many square feet is your tiny home? Please estimate as best as you can. — What was the square footage of where you lived previously? Please estimate as best as you can.
Do you have electricity (renewable and/or non-renewable) in your tiny home? — Did you have any electricity (renewable and/or non-renewable) in your previous home?	None.	Do you have electricity (renewable and/or non-renewable) in your tiny home? — Did you have any electricity (renewable and/or non-renewable) in your previous home?
How energy efficient is your tiny home? — How energy efficient was your previous home?	None.	How energy efficient is your tiny home? — How energy efficient was your previous home?
What percentage of your tiny home's electricity comes from renewable resources (either directly or through purchased green power)? — What percentage of your previous home's electricity came from renewable resources (either directly or	None.	What percentage of your tiny home's electricity comes from renewable resources (either directly or through purchased green power)? — What percentage of your previous home's electricity came from renewable resources (either directly or

through purchased green power)?		through purchased green power)?
Is there anything else you would like to add about your tiny home or previous housing type?	None.	Is there anything else you would like to add about your tiny home or previous housing type?
How often do you eat animal-based products? — How often did you eat animal-based products when you lived in your previous home?	None.	How often do you eat animal-based products? — How often did you eat animal-based products when you lived in your previous home?
How often do you eat beef or lamb? — How often did you eat beef or lamb when you lived in your previous home?	None.	How often do you eat beef or lamb? — How often did you eat beef or lamb when you lived in your previous home?
How often do you eat pork? — How often did you eat pork when you lived in your previous home?	None.	How often do you eat pork? — How often did you eat pork when you lived in your previous home?
How often do you eat poultry? — How often did you eat poultry when you lived in your previous home?	None.	How often do you eat poultry? — How often did you eat poultry when you lived in your previous home?
How often do you eat fish or shellfish? — How often did you eat fish or shellfish when you lived in your previous home?	None.	How often do you eat fish or shellfish? — How often did you eat fish or shellfish when you lived in your previous home?
How often do you eat eggs, cheese, and/or dairy?	None.	How often do you eat eggs, cheese, and/or dairy?

— How often did you eat eggs, cheese, and/or dairy when you lived in your previous home?		— How often did you eat eggs, cheese, and/or dairy when you lived in your previous home?
On average, considering every season, what percent of your diet is fresh, unpackaged foods? — In your previous housing, on average and considering every season, what percent of your diet was fresh, unpackaged foods?	ExPan1: Provide an example. ExPan2: What does this mean, specifically?	On average, considering every season, what percent of your diet is fresh, unpackaged foods? (ex: head of lettuce vs. a bag of lettuce) — In your previous housing, on average and considering every season, what percent of your diet was fresh, unpackaged foods? (ex: head of lettuce vs. a bag of lettuce)
On average, considering every season, what percent of your diet is locally grown or produced? (less than 320 kilometers/200 miles away) — On average, considering every season, what percent of your diet was locally grown or produced? (less than 320 kilometers/200 miles away)	None.	On average, considering every season, what percent of your diet is locally grown or produced? (less than 320 kilometers/200 miles away) — On average, considering every season, what percent of your diet was locally grown or produced? (less than 320 kilometers/200 miles away)
On average, considering every season, what percent of your diet do you produce yourself?	None.	On average, considering every season, what percent of your diet do you produce yourself?
On average, considering every season, what percent of your diet did you produce yourself?	None.	On average, considering every season, what percent of your diet did you produce yourself?
Are your eating habits influenced by your choice to live in a tiny home?	ExPan1: Change habits to behaviors to reflect study's purpose.	Are your eating behaviors influenced by your choice to live in a tiny home?

	ExPan3: Behaviors, not habits.	
Is there anything else you would like to add about your eating habits while living in a tiny home or your previous housing type?	ExPan1: Change habits to behaviors to reflect study's purpose. ExPan3: Behaviors, not habits.	Is there anything else you would like to add about your eating behaviors while living in a tiny home or your previous housing type?
In an average week, how far do you travel by car (as a driver or passenger)? — While in your previous housing, in an average week, how far did you travel by car (as a driver or passenger)?	ExPan3: Suggest specifying how many miles.	In an average week, how many miles do you travel by car (as a driver or passenger)? — While in your previous housing, in an average week, how many miles did you travel by car (as a driver or passenger)?
In an average week, how far do you travel by motorcycle (as a driver or passenger)? — While in your previous housing, in an average week, how far did you travel by motorcycle (as a driver or passenger)?	ExPan3: Suggest specifying how many miles.	In an average week, how many miles do you travel by motorcycle (as a driver or passenger)? — While in your previous housing, in an average week, how many miles did you travel by motorcycle (as a driver or passenger)?
In an average week, how far do you travel by train? — While in your previous housing, in an average week, how far did you travel by train?	ExPan3: Suggest specifying how many miles.	In an average week, how many miles do you travel by train? — While in your previous housing, in an average week, how many miles did you travel by train?
In an average week, how far do you travel by bus? — While in your previous housing, in an average week, how far did you travel by	ExPan3: Suggest specifying how many miles.	In an average week, how many miles do you travel by bus? — While in your previous housing, in an average week,

bus?		how many miles did you travel by bus?
How many hours do you fly in an average year? — How many hours did you fly in an average year when you lived in your previous home?	None.	How many hours do you fly in an average year? — How many hours did you fly in an average year when you lived in your previous home?
What is the average fuel economy of the vehicle you use most often? — What was the average fuel economy of the vehicle you used most often when you lived in your previous home?	Ex.Pan2: Include miles/gallon	What is the average fuel economy (miles/gallon) of the vehicle you use most often? — What was the average fuel economy (miles/gallon) of the vehicle you used most often when you lived in your previous home?
When you travel by car, how often do you carpool? — When you traveled by car, how often did you carpool in your previous home?	None.	When you travel by car, how often do you carpool? — When you traveled by car, how often did you carpool in your previous home?
Are your traveling habits influenced by your choice to live in a tiny home?	ExPan1: Change habits to behaviors to reflect study's purpose. ExPan3: Behaviors, not habits.	Are your traveling behaviors influenced by your choice to live in a tiny home?
Is there anything else you would like to add about your traveling habits while living in a tiny home or your previous housing type?	ExPan1: Change habits to behaviors to reflect study's purpose. ExPan3: Behaviors, not habits.	Is there anything else you would like to add about your traveling behaviors while living in a tiny home or your previous housing type?
How much do you recycle paper as opposed to throwing it away? — How much did you recycle paper in your previous	None.	How much do you recycle paper as opposed to throwing it away? — How much did you recycle paper in your previous

housing as opposed to throwing it away?		housing as opposed to throwing it away?
How much do you recycle plastic as opposed to throwing it away? — How much did you recycle plastic in your previous housing as opposed to throwing it away?	None.	How much do you recycle plastic as opposed to throwing it away? — How much did you recycle plastic in your previous housing as opposed to throwing it away?
Compared to your neighbors, how much trash do you generate? — Compared to your neighbors, how much trash did you generate in your previous housing?	None.	Compared to your neighbors, how much trash do you generate? — Compared to your neighbors, how much trash did you generate in your previous housing?
Are your recycling habits influenced by your choice to live in a tiny home?	ExPan1: Change habits to behaviors to reflect study's purpose. ExPan3: Behaviors, not habits.	Are your recycling behaviors influenced by your choice to live in a tiny home?
Is there anything else you would like to add about your recycling habits while living in a tiny home or your previous housing type?	ExPan1: Change habits to behaviors to reflect study's purpose. ExPan3: Behaviors, not habits.	Is there anything else you would like to add about your recycling behaviors while living in a tiny home or your previous housing type?
What comes closest to your annual new household furnishings purchases? — What came closest to your annual new household furnishings purchases when you lived in your previous home?	None.	What comes closest to your annual new household furnishings purchases? — What came closest to your annual new household furnishings purchases when you lived in your previous home?
What comes closest to your personal monthly new clothing, footwear and/or	None.	What comes closest to your personal monthly new clothing, footwear and/or

sporting goods purchases? — What came closest to your personal monthly new clothing, footwear and/or sporting goods purchases when you lived in your previous home?		sporting goods purchases? — What came closest to your personal monthly new clothing, footwear and/or sporting goods purchases when you lived in your previous home?
How often do you purchase new household appliances? — How often did you purchase new household appliances when you lived in your previous home?	None.	How often do you purchase new household appliances? — How often did you purchase new household appliances when you lived in your previous home?
How often do you purchase new electronics and gadgets? — How often did you purchase new electronics and gadgets when you lived in your previous home?	None.	How often do you purchase new electronics and gadgets? — How often did you purchase new electronics and gadgets when you lived in your previous home?
How often do you purchase new books, magazines and newspapers? — How often did you purchase new books, magazines and newspapers when you lived in your previous home?	None.	How often do you purchase new books, magazines and newspapers? — How often did you purchase new books, magazines and newspapers when you lived in your previous home?
Do you make an effort to try to buy second-hand goods when possible?	None.	Do you make an effort to try to buy second-hand goods when possible?
Did you make an effort to try to buy second-hand goods when possible in your previous home?	None.	Did you make an effort to try to buy second-hand goods when possible in your previous home?
Are your purchasing habits influenced by your choice to	ExPan1: Change habits to behaviors to reflect study's	Are your purchasing behaviors influenced by your

live in a tiny home?	purpose. ExPan3: Behaviors, not habits.	choice to live in a tiny home?
Is there anything else you would like to add about your lifestyle and habits while living in a tiny home or your previous housing type?	ExPan1: Change habits to behaviors to reflect study's purpose. ExPan3: Behaviors, not habits.	Is there anything else you would like to add about your lifestyle and behaviors while living in a tiny home or your previous housing type?

APPENDIX I

Code Revision Table

	Rate of Agreement *(rounded up)*				
Excerpt	Expert 1	Expert 2	Expert 3	Average	Suggested Codes
1 *(12 codes)*	75%	58%	75%	69%	Expert 1: Recycled Materials Expert 3: Materials in home, material possessions
2 *(14 codes)*	71%	86%	79%	79%	Expert 1: Off-grid capabilities Expert 2: Off-grid Expert 3: Water Conservation
3 *(10 codes)*	80%	80%	90%	83%	Expert 1: Diet changes Expert 2: Changes in one's diet Expert 3: Other Transportation
4 *(12 codes)*	92%	83%	92%	89%	
5 *(15 codes)*	87%	93%	93%	**91%**	

APPENDIX J

Code Definitions

Codes	Code Definition	Examples from Interviews
Housing (positive)	Positive change towards housing was experienced by the participant.	"So my energy usage has drastically been reduced from a traditional home to going tiny."
Housing (negative)	Negative change towards housing was experienced by the participant.	"It was very difficult to downsize to a tiny home."
Food (positive)	Positive change towards food was experienced by the participant.	"In that process, rather than buying a lot of food that's on sale and then it slowly rots in the fridge, not using half of it, we've become a lot more cognizant of what's in the fridge, and use everything that we purchase basically. We also end up doing a lot more fresh produce and really try to get it in a way that has less plastic."
Food (negative)	Negative change towards food was experienced by the participant.	"I don't have a garden anymore, so I don't produce any fruits or vegetables. And I used to."
Transportation (positive)	Positive change towards transportation was experienced by the participant.	"But as a part of this process, we bought a Leaf, and electric vehicle... It's 100% electric so we use no fuel."
Transportation (negative)	Negative change towards transportation was experienced by the participant.	"I know that my gas usage is really increasing my footprint."
Goods & Services (positive)	Positive change towards goods & services was experienced by the participant.	"A positive of downsizing is that I don't purchase as many tangible items as previously."

Goods & Services (negative)	Negative change towards goods & services was experienced by the participant.	"So something else that changed, I don't think in a positive way, are my recycling habits...I have to go to the recycling center, take it out, and put it in the appropriate bin for it to get recycled. So it's more of a process on my part to recycle. And I have to do it frequently because I have a little tiny container. So it's really a hassle, and yeah, I probably don't recycle as much as I would or should."
Water Conservation	Participant expressed that they conserve water in a variety of ways.	"Something that did change, and this might be a result of my current location where it doesn't get much rain, is water conservation. I'm very cautious of how much water I consume."
Solar	Participant expressed that their home uses solar power.	"I have a 2000-watt solar system."
Laundry	Participant expressed that their behaviors related to laundry use have changed.	"Then above the living room and dining room, I have a clothes line. I hang clothes up there, and that's right under our ceiling fan in the summer to help it dry quicker."
Energy Usage	Participant expressed that their energy-related behaviors have been reduced or reexamined.	"I will say that my electrical needs have also changed, I'm very cautious of that because I try to be as off-grid as possible."

Compost Toilet	Participant expressed that they use a compost toilet.	"I save over 150 gallons of potable water per day with my urine diverting compost toilet."
Housing Upkeep	Participant expressed that they experience substantially less housing upkeep than before.	"My kitchen can go from a total disaster to clean in about 10 minutes, because it's designed for me and it works."
Off-Grid Capabilities	Participant expressed that their home has off-grid capabilities.	"Designing and building my own non-toxic, off-grid, solar, water-harvesting, non-fossil fuel, affordable home on wheels is one of the most sustainable lifestyle choices I made."
Recycled Materials	Participant expressed that their home was built with recycled materials.	"I like upcycling/reclaiming resources to keep them from a landfill."
Gardening	Participant expressed what gardening-related behaviors they have.	"I enjoy gardening, so I spend a lot of time outside, as the weather permits."
Food Waste	Participant expressed how their behaviors have changed in regards to food waste (reduction, conservation, etc.)	"But when you downsize and are sharing facilities, you buy less. So you’re not wasting food."
Diet Changes	Participant expressed how their diet has changed.	"Now, I'm able to eat a lot more fresh because I'm growing it, a lot healthier."
Eating Out	Participant expressed that they eat out more or less than before.	"I would say we might eat out more than we used to."
Grocery Shopping	Participant expressed what grocery shopping-related behaviors they have.	"I can't grocery shop like I used to because I don't have the refrigerator that I used to have."

Driving Frequency	Participant expressed that they currently drive more or less than previously.	"My travel has increased because of living tiny, I have to live outside of city limits to be legal, and therefore I'm driving more often."
Vehicle	Participant expressed that their vehicle characteristics have changed.	"As a part of this process, we bought a Leaf, an electric vehicle."
Other Transportation	Participant expressed that they use other types of transportation besides driving.	"Since I am now in a permanent spot, I bike most places."
Purchasing Philosophy	Participant expressed how their purchasing philosophy has changed.	"When I buy something new, I have to get rid of something old. So I buy a new shirt, I get rid of a shirt. One in and one out."
Purchasing Frequency	Participant expressed how their frequency of purchasing changed.	"In the tiny house, if there's not space for it, I don't get it."
Types of Purchases	Participant expressed how their types of purchases have changed.	"I definitely buy sort of less knickknack-y kind of things-- candles, picture frames-- things that I normally would probably change out because I would have more surface area to put things on."
Recycling	Participant expressed how their recycling behaviors have changed.	"We do recycle all of our paper, any packaging that food comes in, plastic, and glass."
Household Products	Participant expressed that they use all-natural, non-toxic household products.	"I am really cautious of the products that I use, that go down the drain. Just to make sure that they're sustainable, they're all biodegradable."

Plastic Use	Participant expressed how they have reduced their plastic use.	"When we are considering buying or replacing something we always look for non-plastic version."
Amount of Belongings	Participant expressed how their amount of belongings have changed.	"And so actually I downsized and downsized until I was comfortable, and really analyzed my clothes."

APPENDIX K

Online Survey Instrument (formatted to word)

Start of Block: Introduction

Q1

Welcome!
Thank you for taking time to participate in this survey on the ecological footprints of tiny home downsizers. **You should be taking this online survey if you currently live full-time in a tiny home under 500 square feet, have occupied your tiny home for a year or more, and live in the United States.** This survey is designed so that the information can be used to measure your current ecological footprint as well as your previous ecological footprint before occupying your tiny home. These questions are primarily derived from the Global Footprint Network Ecological Footprint calculator and may not cover every aspect of your lifestyle; if you wish to provide additional information, please do so in the provided open-ended questions throughout the survey or email Maria Saxton directly (maria.saxton@vt.edu).

Your cooperation in this research will enable researchers to understand the relationship between downsizing to a tiny home and an individual's resulting ecological footprint, and the results may help advocates of the tiny house movement position tiny homes as a comprehensive sustainable housing type.

Questions are designed to ask about your current behaviors/lifestyle while living in your tiny home, followed by questions about your behaviors/lifestyle in your previous housing type. Please answer to the best of your ability, and select or write "I do not recall" if you cannot remember details from your previous housing.

This study is being conducted by the Building Construction department at Virginia Tech. Your participation in this study is voluntary and will remain confidential. Participation will include an online survey that **will take about 15-20 minutes.** Most questions are multiple-choice and a few are open-ended. Please consider all questions over the course of the past year. You can see your progress on the top of the page with the navigation guide. Please participate in this survey only once.

The results of this study may be published in academic journals or conference proceedings,

however any identifying information, including contact and location information, will be replaced with an ID code on all data to protect your privacy. **There is no compensation for participation, however, you will be asked if you wish to receive your ecological footprint results once the data is analyzed.** You are free to withdraw at any time without penalty. If you have any further questions, please direct them to Maria Saxton (maria.saxton@vt.edu).

Please type your name below.

_____

By signing this form, you consent to participate in this study.

Please provide your email address to be considered for further participation in this research (an interview via phone consisting of ~7 open-ended questions) or if the researcher has follow-up questions about your responses. You are not required to provide your email if you do not wish to be considered.

_____

Q1 Would you like your survey results to be sent to you via email once it is analyzed? This may take up to three weeks.

- ○ Yes please (1)
- ○ No thank you (2)

Q2 How did you hear about this research study?

- ○ Facebook group (1)
- ○ Tiny House Magazine (2)
- ○ Tiny House Map (3)
- ○ Direct email from researcher (4)
- ○ From a friend or family member (5)
- ○ Other (6) _____

End of Block: Introduction

Start of Block: Basic Information

Q3 What is your age?

- ○ Under 18 (1)
- ○ 18 - 24 (2)
- ○ 25 - 34 (3)
- ○ 35 - 44 (4)
- ○ 45 - 54 (5)
- ○ 55 - 64 (6)
- ○ 65 - 74 (7)
- ○ 75 - 84 (8)
- ○ 85 or older (9)

Q4 How would you describe yourself? (Choose one or more from the following racial groups)

- [ ] American Indian or Alaska Native (A person having origins in any of the original peoples of North and South America (including Central America), and who maintains a tribal affiliation or community attachment.) (1)
- [ ] Asian (A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.) (2)
- [ ] Black or African American (A person having origins in any of the Black racial groups of Africa – includes Caribbean Islanders and other of African origin.) (3)
- [ ] Hispanic, Latino, or Spanish origin (For example, Mexican or Mexican American, Puerto Rican, Cuban, Salvadoran, Dominican, Columbian, etc.) (4)
- [ ] Native Hawaiian or Other Pacific Islander (A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.) (5)
- [ ] White (A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.) (6)
- [ ] Other (7) _____

Q5 Employment Status: I am currently… (please select all that apply)

- [ ] Working full-time (1)
- [ ] Working part-time (2)
- [ ] A student (3)
- [ ] Unemployed (4)
- [ ] Retired (5)
- [ ] Other (6) _____

Q6 If you are employed, what is your job title and field?

_____

Q7 If you were employed before living in your tiny home, what was your job title and field?

_____

Q8 What is your personal total income?

- ○ Less than $10,000 (1)
- ○ $10,000 - $19,999 (2)
- ○ $20,000 - $29,999 (3)
- ○ $30,000 - $39,999 (4)
- ○ $40,000 - $49,999 (5)
- ○ $50,000 - $59,999 (6)
- ○ $60,000 - $69,999 (7)
- ○ $70,000 - $79,999 (8)
- ○ $80,000 - $89,999 (9)
- ○ $90,000 - $99,999 (10)
- ○ $100,000 - $149,999 (11)
- ○ More than $150,000 (12)

Q9 What is your zip code?

_____

Q10 What was your zip code before you lived in your tiny home?

_____

Q11 Why did you decide to move into a tiny home? Please list reasons in order of importance.

_____

_____

_____

_____

_____

Q12 How long have you lived in your tiny home? (years and months)

_____

Q13 Is your tiny home mobile, semi-mobile, or a permanent structure?

- Mobile (I designed my tiny home to move relatively often) (1)
- Semi-mobile (My tiny home can move, but only when absolutely necessary) (2)
- Permanent structure (My tiny home is a permanent structure and cannot move) (3)

Q14 What kind of setting do you live in primarily?

- ○ Rural (1)
- ○ Suburban (2)
- ○ Urban (3)

Q15 What type of forums, if any, do you use to connect with others in the tiny home community?

- ☐ Facebook (1)
- ☐ Blogs (2)
- ☐ Newsletters (3)
- ☐ Reddit (4)
- ☐ Tiny House Map (5)
- ☐ Other(s) (6) _____
- ☐ None (7)

End of Block: Basic Information

Start of Block: Housing Characteristics

Q16 Which housing type best describes your tiny home?

- ○ Freestanding, no running water (1)
- ○ Freestanding, running water (2)

Q17 What housing type did you downsize to a tiny house from?

- ○ Freestanding, no running water (1)
- ○ Freestanding, running water (2)
- ○ Multi-story apartment (3)
- ○ Duplex, row house, or building with 2-4 housing units (4)
- ○ Luxury condominium (5)
- ○ A mobile home or recreational vehicle (6)
- ○ Other (7) _____

Q18 What material is your tiny house structurally constructed with?

- ○ Straw/bamboo (1)
- ○ Brick/concrete (2)
- ○ Steel/other (3)
- ○ Wood (4)
- ○ Adobe (5)
- ○ Other (6) _____

Q19 What material was your previous home structurally constructed with?

- ○ Straw/bamboo (1)
- ○ Brick/concrete (2)
- ○ Steel/other (3)
- ○ Wood (4)
- ○ Adobe (5)
- ○ Other (6) _____
- ○ I do not recall (7)

Q20 How many people live in your tiny house on a regular basis?

- ○ 1 (just me) (1)
- ○ 2 (2)
- ○ 3 (3)
- ○ 4 (4)
- ○ 5 (5)
- ○ 6 (6)
- ○ Other (7) _____

Q21 How many people lived in your previous house on a regular basis?

- 1 (just me) (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5 (5)
- 6 (6)
- Other (7) _____

Q22 How many square feet is your tiny home? Please estimate as best as you can.

_____

Q23 What was the square footage of where you lived previously? Please estimate as best as you can.

_____

Q24 Do you have any electricity (renewable and/or non-renewable) in your tiny home?

- Yes (1)
- No (2)

Q25 Did you have any electricity (renewable and/or non-renewable) in your previous home?

- ○ Yes (1)
- ○ No (2)
- ○ I do not recall (3)

Q26 How energy efficient is your tiny home?

- ○ Very inefficient (One or more of the following: poor insulation, few LED lamps, heating/cooling systems used often) (1)
- ○ Below average (One or more of the following: inefficient lighting, standard appliances) (2)
- ○ Average (One or more of the following: modern appliances, climate controls) (3)
- ○ Above average (One or more of the following: well insulated, efficient lighting and appliances, careful use) (4)
- ○ Efficiency-centered design (One or more of the following: passive heating/cooling, advanced temperature control and ventilation, low electricity use) (5)

Q27 How energy efficient was your previous home?

- ○ Very inefficient (One or more of the following: poor insulation, few LED lamps, heating/cooling systems used often) (1)
- ○ Below average (One or more of the following: inefficient lighting, standard appliances) (2)
- ○ Average (One or more of the following: modern appliances, climate controls) (3)
- ○ Above average (One or more of the following: well insulated, efficient lighting and appliances, careful use) (4)
- ○ Efficiency-centered design (One or more of the following: passive heating/cooling, advanced temperature control and ventilation, low electricity use) (5)
- ○ I do not recall (6)

Q28 What percentage of your tiny home's electricity comes from renewable resources? (either directly or through purchased green power)?

_____

Q29 What percentage of your previous home's electricity came from renewable resources? (either directly or through purchased green power)?

_____

Q30 Is there anything else you would like to add about your tiny home or previous housing type?

_____

_____

_____

_____

_____

End of Block: Housing Characteristics

Start of Block: Eating Behaviors

Q31 How often do you eat animal-based products?

- Never (vegan) (1)
- Infrequently (vegetarian - eggs/dairy, no meat) (2)
- Occasionally (really like veggies - occasional meat, eggs/dairy) (3)
- Often (balanced meat/veggies - meat a few times a week, eggs/dairy almost daily) (4)
- Very often (meat daily) (5)

Q32 How often did you eat animal-based products when you lived in your previous home?

- Never (vegan) (1)
- Infrequently (vegetarian - eggs/dairy, no meat) (2)
- Occasionally (really like veggies - occasional meat, eggs/dairy) (3)
- Often (balanced meat/veggies - meat a few times a week, eggs/dairy almost daily) (4)
- Very often (meat daily) (5)
- I do not recall (6)

Q33 How often do you eat beef or lamb?

- Never (1)
- Infrequently (once every few weeks or less) (2)
- Occasionally (once or twice a week) (3)
- Often (nearly every day) (4)
- Very often (nearly every meal) (5)

Q34 How often did you eat beef or lamb when you lived in your previous home?

- Never (1)
- Infrequently (once every few weeks or less) (2)
- Occasionally (once or twice a week) (3)
- Often (nearly every day) (4)
- Very often (nearly every meal) (5)
- I do not recall (6)

Q35 How often do you eat pork?

- Never (1)
- Infrequently (once every few weeks or less) (2)
- Occasionally (once or twice a week) (3)
- Often (nearly every day) (4)
- Very often (nearly every meal) (5)

Q36 How often did you eat pork when you lived in your previous home?

- Never (1)
- Infrequently (once every few weeks or less) (2)
- Occasionally (once or twice a week) (3)
- Often (nearly every day) (4)
- Very often (nearly every meal) (5)
- I do not recall (6)

Q37 How often do you eat poultry?

- Never (1)
- Infrequently (once every few weeks or less) (2)
- Occasionally (once or twice a week) (3)
- Often (nearly every day) (4)
- Very often (nearly every meal) (5)

Q38 How often did you eat poultry when you lived in your previous home?

- Never (1)
- Infrequently (once every few weeks or less) (2)
- Occasionally (once or twice a week) (3)
- Often (nearly every day) (4)
- Very often (nearly every meal) (5)
- I do not recall (6)

Q39 How often do you eat fish or shellfish?

- Never (1)
- Infrequently (once every few weeks or less) (2)
- Occasionally (once or twice a week) (3)
- Often (nearly every day) (4)
- Very often (nearly every meal) (5)

Q40 How often did you eat fish or shellfish when you lived in your previous home?

- Never (1)
- Infrequently (once every few weeks or less) (2)
- Occasionally (once or twice a week) (3)
- Often (nearly every day) (4)
- Very often (nearly every meal) (5)
- I do not recall (6)

Q41 How often do you eat eggs, cheese, and/or dairy?

- Never (1)
- Infrequently (once every few weeks or less) (2)
- Occasionally (once or twice a week) (3)
- Often (nearly every day) (4)
- Very often (nearly every meal) (5)

Q42 How often did you eat eggs, cheese, and/or dairy when you lived in your previous home?

- ○ Never (1)
- ○ Infrequently (once every few weeks or less) (2)
- ○ Occasionally (once or twice a week) (3)
- ○ Often (nearly every day) (4)
- ○ Very often (nearly every meal) (5)
- ○ I do not recall (6)

Q43 On average, considering every season, what percent of your diet is... (please move the slider to the correct number)

	0 10 20 30 40 50 60 70 80 90 100
Fresh, unpackaged foods? (ex: head of lettuce vs. a bag of lettuce) ()	
Locally grown or produced? (less than 320 kilometers/200 miles away) ()	
Do you produce yourself? ()	

Q44 In your previous housing, on average and considering every season, what percent of your diet was... (please move the slider to the correct number)

	0 10 20 30 40 50 60 70 80 90 100
Fresh, unpackaged foods? (ex: head of lettuce vs. a bag of lettuce) ()	
Locally grown or produced? (less than 320 kilometers/200 miles away) ()	
Did you produce yourself? ()	

Q45 Are your eating behaviors influenced by your choice to live in a tiny home?

- Yes (1)
- Sometimes (2)
- No (3)

Q46 Is there anything else you would like to add about your eating behaviors while living in a tiny home or your previous housing type?

_____

_____

_____

_____

_____

End of Block: Eating Behaviors

Start of Block: Transportation Behaviors

Q47 In an average week, how many miles do you travel by... (please move the slider to the correct number)

	0 50 100 150 200 250 300 350 400 450 500
Car (as a driver or passenger) ()	
Motorcycle (as a driver or passenger) ()	
Train ()	
Bus ()	

Q48 While in your previous housing, in an average week, how many miles did you travel by... (please move the slider to the correct number)

	0 50 100 150 200 250 300 350 400 450 500
Car (as a driver or passenger) ()	
Motorcycle (as a driver or passenger) ()	
Train ()	
Bus ()	

Q49 How many hours do you fly in an average year?

_____

Q50 How many hours did you fly in an average year when you lived in your previous home?

_____

Q51 What is the average fuel economy (miles/gallon) of the vehicle you use most often?

_____

Q52 What was the average fuel economy (miles/gallon) of the vehicle you used most often when you lived in your previous home?

_____

Q53 When you travel by car, how often do you carpool?

- Never (1)
- Infrequently (2)
- Occasionally (3)
- Often (4)
- Always (5)

Q54 When you traveled by car, how often did you carpool in your previous home?

- Never (1)
- Infrequently (2)
- Occasionally (3)
- Often (4)
- Always (5)
- I do not recall (6)

Q55 Are your traveling behaviors influenced by your choice to live in a tiny home?

- ○ Yes (1)
- ○ Sometimes (2)
- ○ No (3)

Q56 Is there anything else you would like to add about your traveling behaviors while living in a tiny home or your previous housing type?

_____

_____

_____

_____

_____

End of Block: Transportation Behaviors

Start of Block: Recycling Behaviors

Q57 How much do you recycle paper as opposed to throwing it away?

- ○ Little to none (1)
- ○ Some (2)
- ○ Half (3)
- ○ Most (4)
- ○ All (5)

Q58 How much did you recycle paper in your previous housing as opposed to throwing it away?

- Little to none (1)
- Some (2)
- Half (3)
- Most (4)
- All (5)
- I do not recall (6)

Q59 How much do you recycle plastic as opposed to throwing it away?

- Little to none (1)
- Some (2)
- Half (3)
- Most (4)
- All (5)

Q60 How much did you recycle plastic in your previous housing as opposed to throwing it away?

- Little to none (1)
- Some (2)
- Half (3)
- Most (4)
- All (5)
- I do not recall (6)

Q61 Compared to your neighbors, how much trash do you generate?

- Much less (1)
- Less (2)
- About the same (3)
- More (4)
- Much more (5)

Q62 Compared to your neighbors, how much trash did you generate in your previous housing?

- Much less (1)
- Less (2)
- About the same (3)
- More (4)
- Much more (5)
- I do not recall (6)

Q63 Are your recycling behaviors influenced by your choice to live in a tiny home?

- Yes (1)
- Sometimes (2)
- No (3)

Q64 Is there anything else you would like to add about your recycling behaviors while living in a tiny home or your previous housing type?

_____

_____

_____

_____

_____

End of Block: Recycling Behaviors

Start of Block: Purchasing Behaviors

Q65 What comes closest to your annual new household furnishings purchases?

- A lot (I completely refurnish my living room, it's an annual ritual) (1)
- Above average (a couch or new bedroom set - I like to change it up) (2)
- Average (new bedding and a lamp or table, just to spruce things up) (3)
- Not much (I haven't decorated in years, maybe just new towels and sheets) (4)
- Minimal to none (5)

Q66 What came closest to your annual new household furnishings purchases when you lived in your previous home?

- A lot (I completely refurnished my living room, it was an annual ritual) (1)
- Above average (a couch or new bedroom set - I liked to change it up) (2)
- Average (new bedding and a lamp or table, just to spruce things up) (3)
- Not much (I didn't decorate in years, maybe just new towels and sheets) (4)
- Minimal to none (5)
- I do not recall (6)

Q67 What comes closest to your personal monthly new clothing, footwear and/or sporting goods purchases?

- Minimal to none (1)
- Not much (underwear and socks) (2)
- Average (shirts, underwear, socks) (3)
- Above average (shoes, pants, shirts, underwear, socks) (4)
- A lot (several new outfits and shoes every month) (5)

Q68 What came closest to your personal monthly new clothing, footwear and/or sporting goods purchases when you lived in your previous home?

- ○ Minimal to none (1)
- ○ Not much (underwear and socks) (2)
- ○ Average (shirts, underwear, socks) (3)
- ○ Above average (shoes, pants, shirts, underwear, socks) (4)
- ○ A lot (several new outfits and shoes every month) (5)
- ○ I do not recall (6)

Q69 How often do you purchase new household appliances?

- ○ Never, rarely (I don’t purchase major appliances for my home) (1)
- ○ Infrequently (I only replace broken appliances as needed) (2)
- ○ Occasionally (I sometimes replace out-of-date appliances with new models) (3)
- ○ Often (I replace most of my appliances with the latest models) (4)
- ○ Very often (I always have the latest and greatest appliances) (5)

Q70 How often did you purchase new household appliances when you lived in your previous home?

- Never, rarely (I didn't purchase major appliances for my home) (1)
- Infrequently (I only replaced broken appliances as needed) (2)
- Occasionally (I sometimes replaced out-of-date appliances with new models) (3)
- Often (I replaced most of my appliances with the latest models) (4)
- Very often (I always had the latest and greatest appliances) (5)
- I do not recall (6)

Q71 How often do you purchase new electronics and gadgets?

- Never, rarely (I upgrade my mobile phone every few years) (1)
- Infrequently (I generally only replace broken TVs, computers) (2)
- Occasionally (I replace out-of-date models and occasionally buy a new gadget) (3)
- Often (I own many of the newest gadgets on the market) (4)
- Very often (I always have the latest and greatest gadgets) (5)

Q72 How often did you purchase new electronics and gadgets when you lived in your previous home?

- Never, rarely (I upgraded my mobile phone every few years) (1)
- Infrequently (I generally only replaced broken TVs, computers) (2)
- Occasionally (I replaced out-of-date models and occasionally bought a new gadget) (3)
- Often (I owned many of the newest gadgets on the market) (4)
- Very often (I always had the latest and greatest gadgets) (5)
- I do not recall (6)

Q73 How often do you purchase new books, magazines and newspapers?

- Never, rarely (I buy a newspaper, magazine, or new book a few times a year) (1)
- Infrequently (I read most of the news online and borrow many of the books and magazines I read) (2)
- Occasionally (I read some news online and subscribe to a couple of magazines or newspapers) (3)
- Often (I often get a newspaper and buy books or magazines every week or two) (4)
- Very often (I get a daily newspaper and buy books or magazines several times a week) (5)

Q74 How often did you purchase new books, magazines and newspapers when you lived in your previous home?

- Never, rarely (I would buy a newspaper, magazine, or new book a few times a year) (1)
- Infrequently (I read most of the news online and borrowed many of the books and magazines I read) (2)
- Occasionally (I read some news online and subscribed to a couple of magazines or newspapers) (3)
- Often (I often got a newspaper and bought books or magazines every week or two) (4)
- Very often (I got a daily newspaper and bought books or magazines several times a week) (5)
- I do not recall (6)

Q75 Do you make an effort to try to buy second-hand goods when possible?

- I don't think about this (1)
- I make an effort (2)
- I make a big effort to do this (3)

Q76 Did you make an effort to try to buy second-hand goods when possible in your previous home?

- I didn't think about this (1)
- I made an effort (2)
- I made a big effort to do this (3)
- I do not recall (4)

Q77 Are your purchasing behaviors influenced by your choice to live in a tiny home?

- ○ Yes (1)
- ○ Sometimes (2)
- ○ No (3)

Q78 Is there anything else you would like to add about your lifestyle and behaviors while living in a tiny home or your previous housing type?

_____

_____

_____

_____

_____

End of Block: Purchasing Behaviors

APPENDIX L

Survey Raw Data

Participant Code	How heard about study	Age	Ethnicity	Employment Status	Job Title/Field (Generalized)	Previous Job Title/Field (Generalized)	Personal Total Income	Current State	Previous State
P01	Tiny House Magazine	35-44	White	Working full-time	Social Services/Government	Government	$60,000-$69,000	OR	MI
P02	Tiny House Magazine	55-64	White	Working full-time	Cashier	Cashier	$20,000-$29,000	CO	MO
P03	Tiny House Magazine	35-44	White	Working full-time	Marketing Strategist	Photographer	$50,000-$59,000	NC	GA
P04	Facebook Group	35-44	White	Unemployed	N/A	Licensed massage therapist	$20,000-$29,000	SC	SC
P05	Facebook Group	18-24	Native Hawaiian or Other Pacific Islander	Working full-time	Military	Military	$20,000-$29,000	TX	TX
P06	Facebook Group	25-34	White	Working full-time	Project Engineer	Project Engineer	$70,000-$79,000	TX	TX
P07	Facebook Group	55-64	White	Retired	N/A	Teacher	$20,000-$29,000	TX	TX
P08	Facebook Group	55-64	White	Working part-time	Licensed Massage Therapist	Owner operator of Medical massage clinic	Less than $10,000	NC	NC
P09	Facebook Group	35-44	White	Working part-time	Chief exploration operator at Travel Company	Volunteer Coordinator Non-Profit	$10,000-$19,000	ME	ME
P10	Facebook Group	25-34	White	Working full-time	Nurse	Nurse	$60,000-$69,000	OR	OR
P11	Facebook Group	55-64	White	Retired	N/A	Project Manager, Information Technology	More than $150,000	CA	CO
P12	Facebook Group	25-34	Hispanic, Latino, or Spanish Heritage	Working part-time & student	Program Coordinator, non-profit	Community school coordinator, education	$30,000-$39,000	CA	CA
P13	Facebook Group	45-54	Mixed	Working full-time	Writer	Writer	$30,000-$39,000	WA	WA
P14	Facebook Group	65-74	White	Retired/working part-time	construction cost estimator	construction cost estimator	$20,000-$29,000	IN	IN

Participant Code	How heard about study	Age	Ethnicity	Employment Status	Job Title/Field (Generalized)	Previous Job Title/Field (Generalized)	Personal Total Income	Current State	Previous State
P15	Facebook Group	25-34	White	Working full-time	Curator, Museum/Cultural Heritage	Collections Assistant, Museums/Cultural Heritage	$30,000-$39,000	MN	MN
P16	Facebook Group	25-34	White	Working full-time	Video Producer - Energy Company	Video Producer - Technology Company	$90,000-$99,000	VA	VA
P17	Tiny House Map	55-64	White	Retired	N/A	Emergency Room Tech/Urgent Care Supervisor/ Disaster Preparedness Educator	$20,000-$29,000	CA	CA
P18	Tiny House Map	25-34	White	Student	Online Masters Student & a freelance Graphic Designer Web Designer	Secretary	$10,000-$19,000	NV	CA
P19	Tiny House Magazine	45-54	White	Working part-time	Government contractor, National Guard	Government contractor, National Guard	$100,000-$149,000	WI	WI
P20	Tiny House Map	55-64	White	Working part-time	Event specialist	Event specialist	Less than $10,000	TX	TX
P21	Tiny House Map	55-64	White	Working part-time	Spa owner	Teachers aid	Less than $10,000	OR	TX
P22	Tiny House Map	25-34	White	Working full-time	Carpenter	Army MP	$50,000-$59,000	CO	CO
P23	Tiny House Map	25-34	White	Unemployed	Mother and homemaker	Esthetician	Less than $10,000	MT	FL
P24	Tiny House Map	25-34	White	Working part-time	Self-employed, design-build	CAD operator, cement mason	$30,000-$39,000	OR	CA
P25	Tiny House Map	35-44	White	Retired	N/A	Business owner/wedding gown designer	$50,000-$59,000	IN	IN
P26	Tiny House Map	65-74	White	Retired	N/A	Management Consultant, Technology	$70,000-$79,000	CA	CA

Participant Code	How heard about study	Age	Ethnicity	Employment Status	Job Title/Field (Generalized)	Previous Job Title/Field (Generalized)	Personal Total Income	Current State	Previous State
P27	Tiny House Map	55-64	White	Retired	N/A	College professor	$90,000-$99,000	OR	OR
P28	Tiny House Map	55-64	White	Working full-time	HR Manager in Tech Field	HR Manager in Tech Field	$60,000-$69,000	TX	TX
P29	Tiny House Map	45-54	White	Working full-time	Self-employed, author, speaker, and coach.	Restaurant Owner/Chef and professional artist.	$50,000-$59,000	VA	VA
P30	Tiny House Map	55-64	White	Retired	N/A	hospice chaplain	$20,000-$29,000	NJ	NJ
P31	Tiny House Map	35-44	White	Working full-time	Art educator at public school	Art educator at public school	$80,000-$89,000	NY	NY
P32	Facebook Group	35-44	White	Working full-time	Assistant Professor-Interior Design	Assistant Professor- Interior Design	$70,000-$79,000	OK	WV
P33	Facebook Group	55-64	White	Other (disabled)	N/A	Registered Nurse	$20,000-$29,000	WA	WA
P34	Facebook Group	25-34	White	Working full-time	MD emergency medicine physician	MD emergency medicine physician	More than $150,000	UT	UT
P35	Facebook Group	35-44	White	Working full-time	Occupational Therapist, Professor at a University, and Life Coach	Occupational Therapist Clinical Manager	$80,000-$89,000	TX	TX
P36	Facebook Group	55-64	White	Working part-time	Project manager	Project manager	$30,000-$39,000	VA	VA
P37	Facebook Group	45-54	White	Working full-time	Child Welfare Specialist	Teacher	$50,000-$59,000	OK	AZ
P38	Facebook Group	55-64	White	Working full-time	Sales analyst - consumer goods	Sales analyst - consumer goods	$60,000-$69,000	TX	TX
P39	Facebook Group	55-64	White	Unemployed	N/A	Writer/editor, communications	$20,000-$29,000	VA	VA
P40	Facebook Group	25-34	White	Other: Stay at home parent	N/A	Elementary teacher	Less than $10,000	MI	SC

Participant Code	How heard about study	Age	Ethnicity	Employment Status	Job Title/Field (Generalized)	Previous Job Title/Field (Generalized)	Personal Total Income	Current State	Previous State
P41	Tiny House Magazine	65-74	White	Working full-time	Founder, 501c3 Mass. NPO, Sustainable Lifestyle company	Same as now, with history of positions in corporate world as CEO and CFO, (also CPA)	$80,000-$89,000	MA	MA
P42	Facebook Group	55-64	White	Retired/working part-time	Child and family car provider	Deputy program manager	$10,000-$19,000	CA	NJ
P43	Tiny House Map	55-64	White	Working part-time	Substitute Teacher and Private Tutor	Full-time Teacher - Elementary	$10,000-$19,000	WA	OR
P44	Blog	35-44	White	Working full-time	Writer	Recruiter, Employment Industry	$20,000-$29,000	NC	NC
P45	Blog	25-34	White	Working part-time	N/A	Waitress	$10,000-$19,000	WY	WY
P46	Blog	35-44	White	Working full-time	Graphic Design, online retail	Grocery manager, graphic designer	$40,000-$49,000	OR	WA
P47	Blog	25-34	White	Working full-time	Sales Rep	Sales Rep	$70,000-$79,000	FL	FL
P48	Tiny House Magazine	55-64	White	Working full-time	Assistant Manager in a small coffee shop	Retail sales and marketing	$20,000-$29,000	MN	NY
P49	Facebook Group	55-64	White	Working full-time	Self-employed entrepreneur - Fitness, Network Marketing, Freelance Writing	Self-employed entrepreneur - Fitness, Network Marketing, Freelance Writing	$30,000-$39,000	CO	ID
P50	Facebook Group	55-64	White	Retired	N/A	Rock/Metal Band promoter	$20,000-$29,000	OR	OR
P51	Facebook Group	55-64	White	Retired	N/A	Senior Tax Searcher. Real estate	$30,000-$39,000	TN	PA
P52	Facebook Group	18-24	White	Student / Military	Reserve military officer	National guard soldier	$20,000-$29,000	WV	WV
P53	Facebook Group	25-34	White	Working full-time	Middle School Teacher	Middle School Teacher	$30,000-$39,000	AL	AL
P54	Facebook Group	25-34	White	Working full-time	Quality Control Auditor (HR)	Quality Control Auditor (HR)	$30,000-$39,000	WA	WA

Participant Code	How heard about study	Age	Ethnicity	Employment Status	Job Title/Field (Generalized)	Previous Job Title/Field (Generalized)	Personal Total Income	Current State	Previous State
P55	Facebook Group	45-54	White	Working full-time	Park Manager for a tiny house Community	Live in Caregiver	$20,000-$29,000	FL	FL
P56	Facebook Group	55-64	White	Working full-time	Insurance claims adjuster	Insurance claims adjuster	$90,000-$99,000	NC	CA
P57	Facebook Group	35-44	White	Working full-time	University researcher	University researcher	$60,000-$69,000	CO	CO
P58	Facebook Group	55-64	White	Working full-time	Sole proprietor, picture framing & home remodeling	Sole proprietor, picture framing & home remodeling	$20,000-$29,000	TX	TX
P59	Facebook Group	35-44	Hispanic, Latino, or Spanish Heritage	Working full-time	Director or client services/Marketing	Marketing manager	$70,000-$79,000	CA	CA
P60	Facebook Group	35-44	White	Unemployed	N/A	Nursing/Medical	Less than $10,000	TN	TN
P61	Facebook Group	25-34	White	Working full-time	Yak Ranch Manager	Owner/Operator of a in home bakery	$10,000-$19,000	CO	OR
P62	Tiny House Map	25-34	White	Working full-time	Co-Director, entertainment & media	Account Executive, marketing	$20,000-$29,000	NC	NC
P63	Facebook Group	25-34	White	Working full-time	Administrative Assistant - Government sector	Administrative Assistant - Government sector	$30,000-$39,000	WA	WA
P64	Blog	25-34	White	Working full-time	Designer, Interior Design	Sales Associate, Retail	$40,000-$49,000	IA	IA
P65	Facebook Group	55-64	American Indian or Alaska Native	Working part-time	Historic preservation consultant	Historic preservation consultant	$60,000-$69,000	KS	OK
P66	From a friend or family member	25-34	White	Working full-time	Full Stack Engineer	Full Stack Engineer	$100,000-$149,000	OH	WA
P67	Facebook Group	35-44	White	Working full-time	Contractor	Bartender	$30,000-$39,000	CA	CA

Participant Code	How heard about study	Age	Ethnicity	Employment Status	Job Title/Field (Generalized)	Previous Job Title/Field (Generalized)	Personal Total Income	Current State	Previous State
P68	Blog	25-34	White	Working part-time	Communications Assistant	Communications Assistant	$50,000-$59,000	CO	CO
P69	Blog	55-64	White	Working part-time	Co-Owner, Alternative Dwellings Company; Owner, Environmental Company	Hazardous Waste Inspector, State Department of Ecology	$30,000-$39,000	WA	OR
P70	Tiny House Map	35-44	Black or African American	Unemployed	N/A	N/A	Less than $10,000	NY	NY
P71	Facebook Group	45-54	White	Unemployed	Disabled	Many jobs. Mother of 4	$20,000-$29,000	MN	MN
P72	Facebook Group	25-34	White	Working part-time	Esthetician & work for another company in crypto currencies	Self-employed estetician & yoga instructor	$30,000-$39,000	GA	GA
P73	Facebook Group	65-74	White	Retired	N/A	N/A	$20,000-$29,000	TX	TX
P74	Facebook Group	25-34	White	Student	N/A	N/A	$10,000-$19,000	MA	WA
P75	Facebook Group	35-44	White	Working part-time	I sub at a daycare, I'm an office manager in the summer at a rafting company and work in a building office pt	Ski school supervisor	$10,000-$19,000	NM	NM
P76	Facebook Group	55-64	White	Retired	N/A	Regional sales rep in the for natural product lines	Less than $10,000	WA	WA
P77	Tiny House Magazine	55-64	White	Working full-time	Sales-Plumbing Supply	Sales-Plumbing Supply	$70,000-$79,000	CA	CA
P78	Tiny House Magazine	45-54	White	Working part-time	Accounting Manager	Accounting Manager	$30,000-$39,000	NC	NC

Participant Code	How heard about study	Age	Ethnicity	Employment Status	Job Title/Field (Generalized)	Previous Job Title/Field (Generalized)	Personal Total Income	Current State	Previous State
P79	Tiny House Magazine	65-74	White	Retired/working part-time	Mental health evaluator. Field of Social Work.	Psychiatric Social Worker Supervisor. Field of Social Work	$80,000-$89,000	OR	CA
P80	From a friend or family member	25-34	White	Working full-time	Sys admin	Sys admin	$30,000-$39,000	WA	WA

Tiny Home (TH) Characteristics

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P01	I WAS MOVING BACK HOME TO (State) FROM (State) AND I COULD NOT AFFORD RENTAL COSTS, IT WAS TOO EXPENSIVE TO AFFORD A PLACE WHERE I DID NOT HAVE ANY EQUITY. FINANCIAL REASONS IS NUMBER 1. NUMBER 2 IS WANTED TO DOWNSIZE AND FIND MEANING IN MY EXPERIENCES RATHER MATERIAL ITEMS. NUMBER 3 I WANTED TO TRAVEL WITHOUT HAVING TO MOVE MY STUFF. NUMBER 4 I WANTED TO GET MORE OUT OF MY COMMUNITY AND BE FORCED TO GET OUT OF THE HOUSE. NUMBER 5 I WANTED MY LIFE TO BE DIFFERENT AND NOT CONFINDED TO FOUR WALLS. NUMBER 6 I WANTED TO HAVE A SMALLER FOOTPRINT.	13	Semi-mobile	Rural	Facebook, blogs, Tiny House map	Freestanding, running water	Wood	1	300	324	Yes	Efficiency-centered design	0.55

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P02	Unsafe where I was living Closer to grandkids Wanted to live in log cabin Didnt know where I wanted to live Less work Less maintenance	28	Mobile	Rural	Facebook	Freestanding, running water	Wood	2	208	1,692	Yes	Above average	0.00
P03	1) Did not feel we needed the space of a more traditional home 2) Wanted the option to be mobile 3) Felt challenged by the idea 4) Wanted to reappropriate money to other experiences	26	Semi-mobile	Rural	Facebook, blogs, newsletters	Freestanding, running water	Wood	3	240	3,960	Yes	Above average	0.00
P04	Smaller footprint Less bills More independence More disposable income	29	Semi-mobile	Rural	Facebook	Freestanding, NO running water	Wood	1	105	2,395	Yes	Average	1.00
P05	Cost of living, desire to own my own home, ability to be mobile.	12	Mobile	Rural	Facebook, blogs	Freestanding, running water	Wood	3	208	1,092	Yes	Average	0.00
P06	Minimalism, financial freedom, environmental impact	36	Mobile	Rural	Facebook, Reddit, Instagram	Freestanding, NO running water	Wood	2	112	888	Yes	Very inefficient	1.00
P07	1. I like small places 2. less stress 3. no debt	13	Semi-mobile	Rural	Facebook, Tiny House Map, Meetup groups	Freestanding, running water	Wood	1	125	1275	Yes	Above average	0.00
P08	To live more authentically, have a smaller footprint and closer to nature.	36	Semi-mobile	Rural	Facebook	Freestanding, NO running water	Wood	1	84	1416	Yes	Efficiency-centered design	1.00

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P09	simplify, cost and for the great good of the world. Smaller footprint.	18	Mobile	Suburban	Facebook	Freestanding, running water	Wood	1	293	707	Yes	Efficiency-centered design	0.00
P10	Independence and freedom To live a life with less stuff holding me back To create a moveable home (not wanting to be stuck in one place, but still having a place of my own)	26	Mobile	Urban	Facebook, blogs, newsletters	Freestanding, running water	Wood	2	160	840	Yes	Average	0.00
P11	Expense of maintaining a house. Time to maintain house and yard. Not sure where I would finally live and did not want to rent. Too much stuff	14	Semi-mobile	Rural	Facebook, blogs	Freestanding, running water	Wood	1	380	1420	Yes	Above average	0.00
P12	Be able to own a home in a high cost of living area, save money, be more eco friendly	13	Mobile	Rural	Facebook, blogs	Freestanding, running water	Wood	2	240	260	Yes	Above average	0.85
P13	Limited mobility easier to care for, financially too expensive to keep 3 bedroom house, ability to move around	48	Semi-mobile	Rural	Facebook	Freestanding, running water	Wood	2	200	1000	Yes	Efficiency-centered design	1.00
P14	bank wanted their house back :) 2008 recession victim	41	Semi-mobile	Rural	Facebook	Freestanding, NO running water	Wood	1	160	1540	Yes	Above average	0.25
P15	Less stuff, more outdoor time, simplicity	27	Permanent	Rural	Facebook	Freestanding, running water	Wood	1	120	780	Yes	Average	0.25
P16	Smaller footprint, off grid, live simply	14	Mobile	Rural	Facebook, Reddit	Freestanding, running water	Wood	1	260	2240	Yes	Above average	1.00

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P17	I wanted to live more economically, more simply, without Debt.	29	Mobile	Suburban	Blogs, newsletters, meetups	Freestanding, running water	Wood	1	144	1456	Yes	Efficiency-centered design	0.00
P18	Cost effective, less-to-clean, good for the environment/off grid, mobile, simple life, more money for travel and missionary work.	36	Mobile	Rural	Facebook, blogs, Tiny House map	Freestanding, running water	Wood	1	96	1104	Yes	Efficiency-centered design	0.20
P19	I owned a small hobby farm and loved it but found that it was starting to own me - time and money. Had a "thing" for tiny homes since I read an article about Jay Shafer's original Tumbleweed in an article in about 2008.	39	Semi-mobile	Rural	Blogs	Freestanding, NO running water	Wood	1	250	750	Yes	Above average	0.50
P20	To use my husbands per diem funds more efficiently	24	Semi-mobile	Urban	Facebook	Freestanding, running water	Steel/ other	2	280	720	Yes	Above average	0.00
P21	My mom died and I had to get rid of 92 years worth of stuff. I didn't want that for myself. Living small enough to live my dreams.	92	Mobile	Rural	Facebook, Tiny House Map	Freestanding, NO running water	Wood	2	300	1220	Yes	Efficiency-centered design	0.30
P22	1.Focus on what is most important in life. 2.Get out of debt 3. Be able to have a good work/life balance	12	Semi-mobile	Rural	Facebook, blogs, personal relationships	Freestanding, running water	Wood	3	250	500	Yes	Above average	0.00
P23	Income reduction Lifestyle change Self-reliance	12	Mobile	Rural	Facebook, Instagram	Freestanding, running water	Wood	4	200	640	Yes	Above average	1.00

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P24	More freedom to travel home ownership Live in a structure I built Low monthly rent	22	Semi-mobile	Suburban	Blogs, Instagram	Freestanding, running water	Wood	1	145	3855	Yes	Above average	0.00
P25	Affordability. A desire to simplify. Ability to build it ourselves. Desire to travel more	41	Semi-mobile	Suburban	Facebook, blogs, Tiny House map	Freestanding, running water	Wood	4	455	1760	Yes	Above average	0.00
P26	1. Simplification and minimalist living 2. Debt free. 3. Ability to move wherever and whenever I wished	50	Mobile	Suburban	Blogs, newsletters, Tiny House map	Freestanding, running water	Wood	1	175	1425	Yes	Efficiency-centered design	0.75
P27	Ability to travel, reduce environmental impact, affordability	27	Semi-mobile	Rural	Facebook, Tiny House map	Freestanding, running water	Wood	3	225	2150	Yes	Efficiency-centered design	0.50
P28	Economic boost. Paid cash for property (no mortgage), $20 electric bill, $250 property tax, $300 insurance.	15	Permanent	Rural	Facebook, blogs, Tiny House map	Freestanding, running water	Steel/ other	2	240	1509	Yes	Average	1.00

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P29	To hit the reset button on our lives because we'd become frazzled by crazy long work hours and demanding nature of being restaurant owners. We'd had a few financial set backs that were like a one two punch (plus three and four) and we just needed a break from working so hard and the only way to get that break was the drastically reduce our expenses. So going tiny was first to rest and recoup from being beat up by life, and secondly - financial reasons. The freedom to go anywhere was also a factor but our tiny is expensive to move so we didn't move her around much.	48	Semi-mobile	Rural	Facebook, blogs, newsletters, Tiny House festivals	Freestanding, running water	Wood	2	125	640	Yes	Efficiency-centered design	0.00
P30	wanted to down size to a simpler life	36	Semi-mobile	Suburban	Facebook	Freestanding, running water	Wood	1	190	610	Yes	Above average	0.00
P31	To be able to buy land without mortgage Feel home Independence (economic and environmental) To change relationship with environment To change relationships with daily routines Challenge of building home myself	62	Semi-mobile	Rural	Blogs, instagram	Freestanding, running water	Wood	1	192	3308	Yes	Efficiency-centered design	1.00
P32	Financial freedom, sustainability, minimal lifestyle, travel/mobile	31	Mobile	Rural	Facebook, blogs, Tiny	Freestanding, running water	Wood	1	165	660	Yes	Efficiency-	1.00

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
					House Map. conferences							centered design	
P33	Finances, ecology, health limitations (prior to being 100% disabled), minimalism	19	Mobile	Rural	Facebook	Freestanding, running water	Wood	3	200	4,008	Yes	Efficiency-centered design	0.00
P34	1. Cost savings 2. Adventure 3. Artistry 4. Minimalism	23	Mobile	Suburban	Facebook, newsletters	Freestanding, running water	Wood	2	240	710	Yes	Efficiency-centered design	0.00
P35	I wanted a house, but liked the flexibility of apartment living. I'm a gypsy at heart! ;) Affordability- Wanting to be debt free Liked the idea of downsizing stuff to get clarity of what stuff I actually needed	17	Semi-mobile	Urban	Facebook	Freestanding, running water	Wood	1	304	396	Yes	Above average	0.00
P36	Exercise in a structural design concept, didn't need/want all of the stuff (smaller scale), less cleaning	12	Permanent	Rural	Blogs	Freestanding, no running water	Wood	1	255	745	Yes	Efficiency-centered design	1.00
P37	Financial independence, Build my own house, Live in the country/small town, Downsize	48	Semi-mobile	Rural	Facebook, blogs	Freestanding, running water	Wood	1	480	1385	Yes	Above average	0.00
P38	Only way to afford retirement, mobility, freedom	15	Mobile	Rural	Facebook, blogs, instagram	Freestanding, running water	Wood	1	297	903	Yes	Above average	0.00

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P39	1. Wanted to reduce our resource consumption; smaller carbon footprint. 2. Wanted to reduce our financial overhead in order to leave our full-time jobs. 3. Wanted to spend our time with family, friends and traveling--rather than working for our house.	35	Semi-mobile	Rural	Facebook, blogs, newsletters, Twitter, Instagram	Freestanding, running water	Wood	2	250	550	Yes	Efficiency-centered design	0.50
P40	To get out of debt, live more sustainably, get rid of stuff, follow warm weather, be near family.	12	Mobile	Rural	Facebook, blogs	Freestanding, running water	Wood	4	200	1240	Yes	Below average	0.00
P41	No affordable, non-toxic building materials, small carbon footprint, small SF, affordable housing was available for my retirement. RV's too poorly built. Freedom from mortgages, freedom from debt consumption society, freedom to be mobile in case of climate change/life events, freedom to have home designed to meet MY needs. Opportunity to design & build my own non-toxic materials, solar energized, water harvesting, off-grid, code exceeding home that I can repair and maintain myself. Did this at age 62 w/o any previous experience.	69	Mobile	Suburban	Facebook, blogs, Tiny House Magazine, I have been keynote speaker, sustainable lifestyle workshop facilitator and speaker at many jamborees and festivals, author of 2	Freestanding, running water	Wood	1	144	1956	Yes	Efficiency-centered design	1.00

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
					books, etc. I know most of the leaders in the community.								
P42	Mobility of tiny, smaller carbon footprint, economically smart, cost of living anywhere.	19	Semi-mobile	Rural	Facebook, blogs	Freestanding, running water	Wood	1	225	975	Yes	Above average	1.00
P43	I was leaving full-time teaching and would no longer be able to afford my mortgage. I also found owning a large home with a yard, as a single person, stressful due to upkeep and repair/maintenance costs. I had planned for some years to downsize into a tiny home just because they appealed to me.	119	Mobile	Suburban	Blogs, newsletters	Freestanding, running water	Wood	1	144	792	Yes	Above average	0.00
P44	Financial. Build something from scratch. Adventure.	12	Permanent	Rural	Facebook, blogs	Freestanding, running water	Wood	2	120	2580	Yes	Efficiency-centered design	1.00
P45	No available housing	48	Mobile	Rural	Facebook, blogs, YouTube	Freestanding, no running water	Wood	1	170	2330	Yes	Above average	0.95

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P46	The ability to eventually work part time (once the house is paid off) so that I can pursue an art career more seriously and also to be able to afford to rent an art studio.	72	Semi-mobile	Suburban	Other- In person conversations	Freestanding, running water	Wood	1	135	665	Yes	Above average	0.00
P47	Financial Less stress better use of space environmental impact	18	Semi-mobile	Rural	Facebook, blogs, newsletters	Freestanding, running water	Wood	2	270	1730	Yes	Efficiency-centered design	0.00
P48	To make the relocation move I wanted to do, and to continue my quest to downsize my life.	18	Semi-mobile	Rural	None	Freestanding, no running water	Wood	1	384	466	Yes	Very inefficient	0.00
P49	Smaller home to take care of & pay for Smaller footprint Flexibility to move if we choose to (THOW)	25	Semi-mobile	Suburban	Facebook, blogs, instagram	Freestanding, running water	Wood	2	320	880	Yes	Above average	0.00
P50	Tired of paying high bills for a big house. Didn't need the room.	18	Semi-mobile	Suburban	Facebook	Freestanding, running water	Wood	1	220	1430	Yes	Efficiency-centered design	0.00
P51	Save money on utilities	35	Permanent	Rural	Facebook	Freestanding, no running water	Wood	2	350	1550	Yes	Average	0.00
P52	1. Ease of relocation for military duty. 2. Down size/get rid of clutter. 3. Save the environment.	14	Semi-mobile	Rural	Facebook	Freestanding, running water	Wood	2	384	416	Yes	Above average	0.70

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P53	Being single and 32, my life could look very different in the next years. I wanted something that was mobile and allowed me to be independent.	12	Mobile	Rural	Facebook, blogs	Freestanding, running water	Wood	1	316	1684	Yes	Above average	0.00
P54	I wanted to have a home of my own and get out of the ridiculously expensive rental market. I needed something more affordable. I liked the idea of living a more simple life. I also liked the idea of a house I could take with me if needed.	18	Mobile	Rural	Facebook, blogs, Reddit	Freestanding, running water	Wood	2	380	570	Yes	Efficiency-centered design	0.70
P55	The only way I would ever be a homeowner, freedom, affordable	43	Mobile	Suburban	Facebook, blogs, newsletters, Tiny House Map	Freestanding, running water	Wood	1	128	4872	Yes	Efficiency-centered design	0.50
P56	Retirement, less to take care of, travel	15	Mobile	Rural	Facebook, newsletters	Freestanding, running water	Wood	2	200	2800	Yes	Above average	1.00
P57	Animals, outdoor person, environmentally friendly	18	Semi-mobile	Rural	Facebook	Freestanding, running water	Wood	1	130	770	Yes	Efficiency-centered design	1.00
P58	I built my own home My home is paid for Lower my carbon footprint	29	Semi-mobile	Rural	Facebook, blogs, newsletters, Tiny House Map, meetups	Freestanding, running water	Steel/ other	1	224	1876	Yes	Above average	0.00

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P59	To decrease our expenses Less to maintain More family time So that my husband could start his own business	14	Semi-mobile	Suburban	Facebook, blogs	Freestanding, running water	Wood	3	350	1650	Yes	Efficiency-centered design	0.00
P60	Ability to own my home. Go off grid with electricity and water. Ability to promote healthier self sufficient lifestyle. Lessen carbon footprint print. Minimize and appreciate less materialistic lifestyle.	18	Permanent	Rural	Facebook	Freestanding, no running water	Wood	3	300	500	Yes	Efficiency-centered design	1.00
P61	Smaller carbon foot print, portable home, and more affordable!	36	Mobile	Rural	Facebook, blogs, newsletters, Instagram	Freestanding, running water	Wood	3	288	1512	Yes	Above average	0.00
P62	It was a housing option that deeply resonated with me as an affordable option with lower maintenance and greater flexibility. I found by reducing expenses and upkeep, I could enjoy the lifestyle benefits like having more time and funds available for experiences. The lower carbon footprint was also very appealing.	39	Mobile	Suburban	Facebook, blogs, newsletters, Meetups, tiny house festivals and the American Tiny House Association	Freestanding, running water	Wood	2	130	770	Yes	Efficiency-centered design	0.30
P63	Environmental friendliness and responsibility. Cost effective. Minimalist lifestyle. Be more intentional.	18	Mobile	Rural	Facebook, instagram	Freestanding, running water	Wood	2	290	710	Yes	Above average	0.00

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P64	To live more sustainably and to learn how to live in a positive connection with my environment, to save money and pay off student loan debt, to be able to move freely from place to place, to evaluate my needs and desires--in my home, from my community, from the environment, and from my stuff.	30	Mobile	Rural	Blogs, newsletters	Freestanding, no running water	Wood	2	160	740	Yes	Above average	0.00
P65	Retirement, house is too much to take care of with health issues	13	Permanent	Suburban	Facebook	Freestanding, running water	Wood	2	495	1605	Yes	Efficiency-centered design	0.00
P66	* Downsize expenses * Ability to travel with home * Learn how to build a home	13	Mobile	Rural	Facebook, Reddit	Freestanding, running water	Wood	1	240	1760	Yes	Above average	0.00
P67	I live (location). The public schools here are the best in the nation. My 10 year old daughter lives with me.	72	Permanent	Urban	Facebook, Tiny House Map	Freestanding, running water	Brick/ concrete	2	175	1325	Yes	Average	0.00
P68	Financial	60	Permanent	Suburban	Blogs	Freestanding, running water	Wood	3	125	3275	Yes	Efficiency-centered design	0.50
P69	A desire to live more sustainably in community, and with all humility the hope that I could support my natural and human environment in a new way.	156	Mobile	Urban	Facebook, blogs, media, public-speaking	Freestanding, no running water	Wood	1	100	1400	Yes	Efficiency-centered design	1.00

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P70	To have a simple inexpensive lifestyle and control over my time	12	Mobile	Suburban	Blogs, YouTube, Google	Freestanding, running water	Wood	1	87	863	Yes	Above average	0.25
P71	Low cost Location Home/business space	36.00	Permanent	Urban	Facebook	Freestanding, running water	Steel/ other	3	500	1500	Yes	Above average	0.00
P72	I have wanted to for a long time. I figured now is better than later. I was intrigued about simplifying and getting rid of all of the unnecessary items	13	Semi-mobile	Rural	Facebook, blogs	Freestanding, running water	Wood	2	220	1580	Yes	Below average	0.00
P73	Life simplification Financial	12	Permanent	Rural	Facebook, newsletters	Freestanding, running water	Wood	1	340	1380	Yes	Above average	0.00
P74	1) Cheaper than renting 2) Able to have pets, which is difficult with renting 3) Own home without need for long-term location 4) Home which is small and easier to manage upkeep and utilities cost 5) Eco friendly living options not available in larger/standard homes (e.g. small amount of solar, composting toilet, gray water) 6) Live in the country without having a big house	17	Mobile	Rural	Facebook, blogs	Freestanding, no running water	Wood	2	240	1000	Yes	Efficiency-centered design	0.00
P75	I left a job and we were moving, tiny home seemed to fit the family so we didn't have to move houses every 6 months	39	Mobile	Rural	Facebook	Freestanding, running water	Wood	3	250	1100	Yes	Efficiency-centered design	1.00

Participant Code	Reasons for Living in TH (in order of importance)	Length of Time in TH (in months)	Mobility of TH	Setting	Forums Used	TH Housing Type	Material of TH	Occupants in TH	Square Footage of TH	Change in Square Footage	Existence of Electricity in TH	Energy Efficiency of TH	Renewable Resources in TH (%)
P76	I was exposed to toxic black mold and my dog and I got very sick living in rentals in (location). I had a stripped down version of a tiny house built and found a place to park it and rent the space	84	Semi-mobile	Rural	Blogs	Freestanding, no running water	Wood	1	160	600	Yes	Average	0.00
P77	Simplify, downsize and prep for retirement	26	Mobile	Rural	None	Freestanding, running water	Wood	2	392	1500	Yes	Above average	0.90
P78	I was living in 2000 sq ft home and frankly was tired of spending my time on cleaning & upkeep, so I decided smaller was better!	14	Semi-mobile	Rural	Facebook	Freestanding, running water	Wood	1	180	2000	Yes	Above average	0.00
P79	Decreasing my financial obligations. Simplicity and ability to downsize. Sustainability of lifestyle, and living up to my values of minimalism. It enables me to live closer to family.	74	Semi-mobile	Rural	Facebook, newsletters, YouTube	Freestanding, running water	Wood	1	150	1200	Yes	Above average	0.90
P80	Economic	16	Permanent	Rural	Facebook	Freestanding, no running water	Steel/ other	1	380	2600	Yes	Efficiency-centered design	0.98

Previous Home Characteristics

Participant Code	Previous Home Housing Type	Material of Previous Home	Occupants in Previous Home	Square Footage of Previous Home	Existence of Electricity in Previous Home	Energy Efficiency of Previous Home	Renewable Resources in Previous Home
P01	Multi-story apartment	Brick/concrete	1	624	Yes	Very inefficient	0.00
P02	Freestanding, running water	Wood	3	1900	Yes	Below average	0.00
P03	Freestanding, running water	Wood	5	4200	Yes	Average	0.00
P04	Freestanding, running water	Brick/concrete	4	2500	Yes	Very inefficient	0.00
P05	Freestanding, running water	Brick/concrete	3	1300	Yes	Above average	0.00
P06	Duplex, row house, or building with 2-4 housing units	Wood	2	1000	Yes	Below average	0.00
P07	Duplex, row house, or building with 2-4 housing units	Wood	2	1400	Yes	Very inefficient	0.00
P08	Freestanding, running water	Brick/concrete	1	1500	Yes	Below average	0.00
P09	Multi-story apartment	Wood	2	1000	Yes	Average	0.00
P10	Duplex, row house, or building with 2-4 housing units	Wood	3	1000	Yes	Below average	0.00
P11	Freestanding, running water	Wood	1	1800	Yes	Above average	0.00
P12	Multi-story apartment	Brick/concrete	2	500	Yes	Very inefficient	0.00
P13	Freestanding, running water	Wood	4	1200	Yes	Average	0.00
P14	Freestanding, running water	Wood	5	1700	Yes	Below average	0.00
P15	Duplex, row house, or building with 2-4 housing units	Brick/concrete	1	900	Yes	Below average	0.00

Participant Code	Previous Home Housing Type	Material of Previous Home	Occupants in Previous Home	Square Footage of Previous Home	Existence of Electricity in Previous Home	Energy Efficiency of Previous Home	Renewable Resources in Previous Home
P16	Duplex, row house, or building with 2-4 housing units	Brick/concrete	3	2500	Yes	Below average	0.00
P17	Freestanding, running water	Wood	1	1600	Yes	Average	0.00
P18	Freestanding, running water	Wood	3	1200	Yes	Very inefficient	0.00
P19	Freestanding, running water	Wood	1	1000	Yes	Average	0.20
P20	Luxury condominium	Brick/concrete	2	1000	Yes	Average	0.00
P21	Freestanding, running water	Steel/other	1	1520	Yes	Very inefficient	0.10
P22	Multi-story apartment	Wood	2	750	Yes	Very inefficient	0.00
P23	Multi-story apartment	Brick/concrete	5	840	Yes	Very inefficient	0.00
P24	Freestanding, running water	Wood	4	4000	Yes	Average	0.00
P25	Freestanding, running water	Wood	5	2215	Yes	Very inefficient	0.00
P26	Luxury condominium	Brick/concrete	2	1600	Yes	Average	0.50
P27	Freestanding, running water	Wood	2	2375	Yes	Below average	0.00
P28	Freestanding, running water	Brick/concrete	2	1749	Yes	Average	1.00
P29	Freestanding, running water	Wood	2	765	Yes	Average	0.00
P30	Luxury condominium	Brick/concrete	1	800	Yes	Very inefficient	0.00
P31	Freestanding, running water	Wood	3	3500	Yes	Very inefficient	0.00
P32	Freestanding, running water	Wood	1	825	Yes	Average	0.00

Participant Code	Previous Home Housing Type	Material of Previous Home	Occupants in Previous Home	Square Footage of Previous Home	Existence of Electricity in Previous Home	Energy Efficiency of Previous Home	Renewable Resources in Previous Home
P33	Freestanding, running water	Wood		4208	Yes	Very inefficient	0.00
P34	Freestanding, running water	Brick/concrete	2	950	Yes	Very inefficient	0.00
P35	Multi-story apartment	Steel/other	1	700	Yes	Above average	0.00
P36	Freestanding, running water	Wood	2	1000	Yes	Above average	0.00
P37	Freestanding, running water	Wood	1	1865	Yes	Very inefficient	0.00
P38	Freestanding, running water	Brick/concrete	1	1200	Yes	Average	0.00
P39	Multi-story apartment	Brick/concrete	2	800	Yes	Average	0.00
P40	Freestanding, running water	Brick/concrete	3	1440	Yes	Very inefficient	0.00
P41	Freestanding, running water	Brick/concrete	2	2100	Yes	Very inefficient	0.00
P42	Multi-story apartment	Brick/concrete	1	1200	Yes	Very inefficient	0.00
P43	Freestanding, running water	Wood	1	936	Yes	Average	0.00
P44	Freestanding, running water	Wood	2	2700	Yes	Very inefficient	0.00
P45	Duplex, row house, or building with 2-4 housing units	Wood	2	2500	Yes	Average	0.00
P46	Freestanding, running water	Wood	2	800	Yes	Average	0.00
P47	Freestanding, running water	Wood	1	2000	Yes	Average	0.00
P48	A mobile home or recreational vehicle	Steel/other	1	850	Yes	Very inefficient	0.00

Participant Code	Previous Home Housing Type	Material of Previous Home	Occupants in Previous Home	Square Footage of Previous Home	Existence of Electricity in Previous Home	Energy Efficiency of Previous Home	Renewable Resources in Previous Home
P49	Freestanding, running water	Wood	2	1200	Yes	Below average	0.00
P50	Freestanding, running water	Wood	3	1650	Yes	Very inefficient	0.00
P51	Freestanding, running water	Wood	2	1900	Yes	Average	0.00
P52	Freestanding, running water	Wood	2	800	Yes	Very inefficient	0.00
P53	Freestanding, running water	Brick/concrete	4	2000	Yes	Above average	0.00
P54	Multi-story apartment	Brick/concrete	2	950	Yes	Very inefficient	0.00
P55	Freestanding, running water	Brick/concrete	3	5000	Yes	Average	0.00
P56	Freestanding, running water	Wood	5	3000	Yes	Above average	0.00
P57	Freestanding, running water	Brick/concrete	1	900	Yes	Very inefficient	0.00
P58	Freestanding, running water	Wood	4	2100	Yes	Below average	0.00
P59	Freestanding, running water	Wood	5	2000	Yes	Very inefficient	0.00
P60	Freestanding, running water	Brick/concrete	3	800	Yes	Very inefficient	0.00
P61	Freestanding, running water	Wood	3	1800	Yes	Very inefficient	0.00
P62	Freestanding, running water	Brick/concrete	3	900	Yes	Below average	0.00
P63	Freestanding, running water	Wood	2	1000	Yes	Average	0.00
P64	Multi-story apartment	Brick/concrete	2	900	Yes	Very inefficient	0.00
P65	Freestanding, running water	Wood	2	2100	Yes	Average	0.00

Participant Code	Previous Home Housing Type	Material of Previous Home	Occupants in Previous Home	Square Footage of Previous Home	Existence of Electricity in Previous Home	Energy Efficiency of Previous Home	Renewable Resources in Previous Home
P66	Multi-story apartment	Brick/concrete	4	2000	Yes	Below average	0.00
P67	Multi-story apartment	Brick/concrete	3	1500	Yes	Average	0.00
P68	Freestanding, running water	Wood	3	3400	Yes	Below average	0.00
P69	Freestanding, running water	Wood	3	1500	Yes	Below average	0.00
P70	Multi-story apartment	Brick/concrete	1	950	Yes	Below average	0.00
P71	Freestanding, running water	Wood	4	2000	Yes	Very inefficient	0.00
P72	Freestanding, running water	Wood	4	1800	Yes	Very inefficient	0.00
P73	Freestanding, running water	Wood	1	1380	Yes	Above average	0.00
P74	Duplex, row house, or building with 2-4 housing units	Wood	2	1000	Yes	Average	0.00
P75	Freestanding, running water	Adobe	3	1100	Yes	Average	0.00
P76	Multi-story apartment	Brick/concrete	1	600	Yes	Very inefficient	0.00
P77	Freestanding, running water	Wood	4	1500	Yes	Average	0.00
P78	Freestanding, running water	Brick/concrete	4	2000	Yes	Average	0.00
P79	Freestanding, running water	Wood	2	1200	Yes	Average	0.00
P80	Freestanding, running water	Wood	2	2600	Yes	Above average	0.00

Food Behaviors in Tiny Home

Participant Code	Animal-based Products in TH	Beef or Lamb in TH	Pork in TH	Poultry in TH	Fish or Shellfish in TH	Eggs/Cheese/Dairy in TH	Fresh, Unpackaged Food in TH (%)	Locally Grown or Produced in TH (%)	Food Produced Themselves in TH (%)	Relationship Between Food Behaviors and TH	Additional Food Notes
P01	Often	Occasionally	Infrequently	Occasionally	Never	Very often	0.64	0.72	0	Sometimes	I purchase more fresh produce now and buy ITEMS with less preservatives. Before I didn't put that effort into my food choices and it wasn't a part of my everyday life. A huge difference is the fact that since I got my tiny house I do not own a microwave which has drastically cut down on the processed food choices. This is probably the most significant change that I made with regard to my diet and food choices
P02	Often	Often	Often	Often	Occasionally	Often	0.18	0.04	0.04	No	Nothing changed
P03	Often	Occasionally	Often	Often	Infrequently	Very often	0.7	1	0.8	No	
P04	Often	Infrequently	Often	Infrequently	Infrequently	Often	0.6	0.65	0.39	Yes	I am in a more rural location so there is more garden space. Locally produced veggies take more effort to find though. Locally raised meat is more available but it would be directly from farmers in large quantities that I don't currently have room to store.
P05	Occasionally	Occasionally	Infrequently	Often	Infrequently	Often	0.75	0.65	0.05	Yes	

Participant Code	Animal-based Products in TH	Beef or Lamb in TH	Pork in TH	Poultry in TH	Fish or Shellfish in TH	Eggs/Cheese/Dairy in TH	Fresh, Unpackaged Food in TH (%)	Locally Grown or Produced in TH (%)	Food Produced Themselves in TH (%)	Relationship Between Food Behaviors and TH	Additional Food Notes
P06	Very often	Occasionally	Occasionally	Very often	Occasionally	Very often	0.1	0.1	0	Yes	Not able to cook in the tiny house.
P07	Very often	Often	Occasionally	Often	Infrequently	Very often	0.4	0.3	0.05	No	I started eating a Keto diet after I moved into my tiny for reasons unrelated to living tiny.
P08	Infrequently	Never	Never	Never	Infrequently	Occasionally	0.72	0.73	0.35	Yes	Sporadic refrigeration and very little storage keeps my diet fairly simple
P09	Very often	Occasionally	Infrequently	Often	Occasionally	Often	0.57	0.43	0	Sometimes	I cook more often in my tiny kitchen than I ever have in a big house. This kitchen was designed for me and my usage.
P10	Occasionally	Infrequently	Infrequently	Occasionally	Never	Often	0.74	0.72	0.76	Sometimes	I have a flock of 5 happy ducks who produce eggs daily. My tiny house neighbor is a local farmer who often shares veggies
P11	Often	Infrequently	Infrequently	Occasionally	Occasionally	Often	0.8	0.4	0.2	No	
P12	Never	Never	Never	Never	Never	Infrequently	0.85	0.8	0.31	Sometimes	
P13	Occasionally	Occasionally	Infrequently	Often	Infrequently	Occasionally	0.54	0.9	0.77	Yes	Big house cooked huge meals for leftovers and tiny house cook for no leftovers
P14	Very often	Often	Occasionally	Occasionally	Occasionally	Often	0.6	0.07	0.07	Sometimes	Fewer snacks and prepare enough main courses to have leftovers to deal with cravings.

Participant Code	Animal-based Products in TH	Beef or Lamb in TH	Pork in TH	Poultry in TH	Fish or Shellfish in TH	Eggs/Cheese/Dairy in TH	Fresh, Unpackaged Food in TH (%)	Locally Grown or Produced in TH (%)	Food Produced Themselves in TH (%)	Relationship Between Food Behaviors and TH	Additional Food Notes
P15	Infrequently	Infrequently	Infrequently	Occasionally	Infrequently	Often	0.6	0.26	0.8	Yes	I only have a convection oven and hot plate for cooking, so nearly my entire diet has changed as far as what meals I make.
P16	Infrequently	Never	Never	Never	Never	Infrequently	0.33	0.33	0.33	Sometimes	
P17	Occasionally	Infrequently	Infrequently	Occasionally	Infrequently	Often	0.61	0.3	0	Yes	
P18	Infrequently	Never	Never	Never	Never	Infrequently	0.92	0.3	0.1	Sometimes	
P19	Very often	Occasionally	Occasionally	Occasionally	Infrequently	Infrequently	0.7	0.5	0.2	Sometimes	I only ate dairy infrequently in my previous home because I intolerant; I have since fixed that problem and now eat it more frequently.
P20	Often	Occasionally	Occasionally	Infrequently	Occasionally	Often	0.52	0.25	0	No	

Participant Code	Animal-based Products in TH	Beef or Lamb in TH	Pork in TH	Poultry in TH	Fish or Shellfish in TH	Eggs/Cheese/Dairy in TH	Fresh, Unpackaged Food in TH (%)	Locally Grown or Produced in TH (%)	Food Produced Themselves in TH (%)	Relationship Between Food Behaviors and TH	Additional Food Notes
P21	Often	Often	Infrequently	Occasionally	Infrequently	Often	0.3	0.32	0.12	Sometimes	Yes. I have lived in a vegetarian coop and seldom ever drank bottled water prior to going tiny. I also have found I buy more packaged items because other aspects of my life are more difficult based on lack of water. This is largely due to my location. Also I had a heart issue that made everything difficult for nearly 2 years so I used easier cooking options like crock pot meals. In the next few months I will have running water and be healthier eating again. I found this change in my life around water bottles very upsetting.
P22	Often	Occasionally	Occasionally	Occasionally	Infrequently	Very often	0.3	0.4	0.23	Yes	More time and money to grow a garden, hunt for meat, etc. Less room to store food. More trips to the grocery store. Fresher food.
P23	Very often	Often	Often	Often	Infrequently	Very often	0.35	0.33	0.32	Sometimes	
P24	Infrequently	Never	Never	Never	Infrequently	Often	0.64	0.65	0.05	Sometimes	less food waste in the tiny home/produce that has gone bad. Smaller refrigerator helps.
P25	Often	Often	Occasionally	Occasionally	Infrequently	Very often	0.4	1	0.2	Sometimes	

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P26	Never	Never	Never	Never	Never	Never	0.87	0.78	0.2	No	
P27	Infrequently	Never	Never	Occasionally	Infrequently	Often	0.6	0.5	0.2	Sometimes	Less food storage availability in tiny home. Eat out more often
P28	Very often	Occasionally	Occasionally	Occasionally	Occasionally	Often	0.3	0.1	0	No	

Participant Code	Animal-based Products in TH	Beef or Lamb in TH	Pork in TH	Poultry in TH	Fish or Shellfish in TH	Eggs/Cheese/Dairy in TH	Fresh, Unpackaged Food in TH (%)	Locally Grown or Produced in TH (%)	Food Produced Themselves in TH (%)	Relationship Between Food Behaviors and TH	Additional Food Notes
P29	Occasionally	Infrequently	Infrequently	Infrequently	Occasionally	Often	0.9	0.52	0.3	Yes	Our buying changed a lot when we went tiny. Having no real pantry plus my husband's allergy to MSG means we buy canned food very rarely and the only packaged food we still buy is crackers. We now buy bulk food items at our local bulk food store and store them in canning jars. We ate more fresh veg/fruit - especially types that didn't require refrigeration since our fridge was not working for a year or so. We shop more often and buy fresh stuff, and eat less meat but when we get meat it's usually better quality... more fish and shrimp - less poultry/pork/beef and I never was much for lamb although my husband likes it. We eat eggs and he eats a lot of cheese and I'm more likely to buy almond milk than milk. We used to make homemade yogurt in our house but there is no space to make it in our tiny so we don't eat it.
P30	Never	Never	Never	Never	Never	Never	0.82	0.29	0	Sometimes	

Participant Code	Animal-based Products in TH	Beef or Lamb in TH	Pork in TH	Poultry in TH	Fish or Shellfish in TH	Eggs/Cheese/Dairy in TH	Fresh, Unpackaged Food in TH (%)	Locally Grown or Produced in TH (%)	Food Produced Themselves in TH (%)	Relationship Between Food Behaviors and TH	Additional Food Notes
P31	Often	Infrequently	Occasionally	Occasionally	Infrequently	Often	0.71	0.75	0.76	Sometimes	We are developing our new garden (partner is moving in in April and house just moved to forever land in april) and are looking to be closer to 90 percent personally grown.
P32	Often	Occasionally	Infrequently	Often	Infrequently	Often	0.9	0.8	0	Yes	
P33	Often	Occasionally	Infrequently	Occasionally	Infrequently	Often	0.5	0.5	0	Yes	
P34	Often	Occasionally	Infrequently	Occasionally	Infrequently	Often	0.83	0.1	0	Yes	
P35	Very often	Occasionally	Occasionally	Occasionally	Infrequently	Very often	0.7	0.2	0	Yes	
P36	Infrequently	Infrequently	Infrequently	Infrequently	Infrequently	Very often	0.6	0.6	0.15	Yes	
P37	Often	Occasionally	Infrequently	Occasionally	Infrequently	Occasionally	0.7	0.66	0.33	Yes	(Location) does not offer the wide variety of fruits and veggies available in (location). Fresh seafood is also extremely limited. (Location) is a meat and potatoes kind of place and I dislike that aspect of residing here.
P38	Occasionally	Occasionally	Infrequently	Occasionally	Infrequently	Often	0.92	0.63	0	No	Must shop smartly - and more often due to size of fridge

Participant Code	Animal-based Products in TH	Beef or Lamb in TH	Pork in TH	Poultry in TH	Fish or Shellfish in TH	Eggs/Cheese/Dairy in TH	Fresh, Unpackaged Food in TH (%)	Locally Grown or Produced in TH (%)	Food Produced Themselves in TH (%)	Relationship Between Food Behaviors and TH	Additional Food Notes
P39	Infrequently	Never	Never	Never	Never	Often	0.4	0.3	0.09	Yes	One of the reasons we wanted to live here in a tiny house on our friend's rural land was to learn to start producing some of our own food. Each year our garden grows in size in scope. We also now live closer to farms and more farmers markets--which was another reason to build and move here.
P40	Often	Often	Infrequently	Often	Never	Never	0.3	0.1	0.11	Yes	I wish we ate better, that and healthy living being outdoors were reasons to go tiny.
P41	Infrequently	Never	Never	Never	Infrequently	Infrequently	0.96	1	0.72	Yes	I am still moving towards becoming an ethical vegan. However, I am 69 years old and grew up in the dairy belt. I find it extremely difficult to give up eggs and cheese. Over the past decade I have gone from carnivore to Paleo to flexitarian to Pescatarian and am still working towards Vegan.
P42	Occasionally	Occasionally	Infrequently	Occasionally	Never	Often	0.9	0.51	0.51	Yes	
P43	Very often	Infrequently	Often	Infrequently	Often	Often	0.08	0.27	0	No	

Participant Code	Animal-based Products in TH	Beef or Lamb in TH	Pork in TH	Poultry in TH	Fish or Shellfish in TH	Eggs/Cheese/Dairy in TH	Fresh, Unpackaged Food in TH (%)	Locally Grown or Produced in TH (%)	Food Produced Themselves in TH (%)	Relationship Between Food Behaviors and TH	Additional Food Notes
P44	Often	Infrequently	Occasionally	Often	Occasionally	Often	0.75	0.9	0	Sometimes	
P45	Occasionally	Infrequently	Never	Infrequently	Infrequently	Infrequently	0.92	0.5	1	No	
P46	Occasionally	Occasionally	Occasionally	Occasionally	Occasionally	Never	0.81	0.5	0.1	No	My cooking style is mostly the same though I go without having an explosion of cooking gadgets and have a well-equipped thoughtful selection of tools currently. My pantry shelves are also stocked with only essentials. I don't buy stuff on a whim from the store because I don't have endless cupboards to hide food in. My eating and cooking behaviors have more to do with my health journey than they have to do with living tiny. Any changes before and since living tiny have to do with responding to health issues. I will say that living tiny made it possible for me to work part-time for a few years while I dealt with some health stuff. And that was hugely transformative for me. I wouldn't have been to able to afford to take the time otherwise.

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P47	Very often	Often	Often	Often	Often	Often	0.85	0.71	0.2	Sometimes	eat more simple meals
P48	Often	Never	Infrequently	Occasionally	Never	Often	1	0.81	0.05	No	Storage is always a problem in a tiny home. So where to put food that has been canned is a special problem. I have never been a person to run to the grocery store every day or two to get food. And I have a small deep freezer that is in a friends garage.
P49	Often	Infrequently	Occasionally	Occasionally	Occasionally	Often	0.8	0.41	0	No	
P50	Very often	Often	Occasionally	Occasionally	Infrequently	Very often	0.29	0.31	0.1	No	
P51	Very often	Occasionally	Occasionally	Occasionally	Never	Often	0.2	0.5	0.1	No	
P52	Very often	Occasionally	Infrequently	Very often	Infrequently	Often	0.9	0.9	0.05	Sometimes	living tiny and being more observant on the impact single use packaging has on our world has led us to be more conscientious on what and where we purchase and consume. Visiting our farmers market once a week, the co-op and using re-usable bags has become the norm over the last half a year.

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P53	Often	Occasionally	Occasionally	Occasionally	Occasionally	Often	0.3	0.2	0	No	
P54	Often	Occasionally	Infrequently	Occasionally	Never	Often	0.8	0.8	0.1	Yes	
P55	Occasionally	Never	Never	Occasionally	Occasionally	Occasionally	0.95	0.95	0.95	Yes	
P56	Often	Occasionally	Infrequently	Often	Occasionally	Often	0.72	0.51	0	Yes	
P57	Occasionally	Infrequently	Never	Infrequently	Never	Often	0.9	0.69	1	No	
P58	Occasionally	Infrequently	Occasionally	Often	Infrequently	Often	0.95	0.75	0.75	Sometimes	Preparing meals in my tiny home are planned and deliberate. I am much more conscious of how I buy, store, and prepare meals.
P59	Often	Infrequently	Occasionally	Occasionally	Infrequently	Very often	0.25	0.41	0.05	Sometimes	
P60	Often	Never	Infrequently	Often	Infrequently	Often	0.6	0.7	0.4	Yes	
P61	Occasionally	Never	Never	Infrequently	Never	Occasionally	0.95	0.9	0.8	Sometimes	In our tiny house we primarily eat yak meat because it is available on the ranch. It is a much more sustainable meat than beef.

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P62	Often	Infrequently	Occasionally	Often	Infrequently	Very often	0.86	0.45	0	Sometimes	In our tiny home, we have a small under-the-counter fridge. I've found that I waste less food because it can only hold so much, and that I eat fresher because I have to shop more.
P63	Often	Infrequently	Infrequently	Occasionally	Infrequently	Often	0.71	0.8	0.16	Yes	
P64	Often	Occasionally	Never	Occasionally	Infrequently	Often	0.8	0.4	0.1	Sometimes	I recently started getting really interested in Zero Waste living. That has impacted my food choices more than my tiny house has.
P65	Often	Occasionally	Infrequently	Often	Never	Occasionally	0.68	0.55	0.55	No	
P66	Occasionally	Occasionally	Occasionally	Occasionally	Occasionally	Often	0.4	0.4	0	No	Eating behaviors has had 0 impact on my choice to live tiny
P67	Very often	Often	Occasionally	Often	Occasionally	Often	0.29	0.7	0	Yes	No trips Costco no room for bulk family size buy one get one free etc.,.even if the item is more expensive, if it fits the space I have to take it
P68	Occasionally	Infrequently	Infrequently	Occasionally	Never	Often	0.33	0.5	0.05	Sometimes	

Participant Code	Animal-based Products in TH	Beef or Lamb in TH	Pork in TH	Poultry in TH	Fish or Shellfish in TH	Eggs/Cheese/Dairy in TH	Fresh, Unpackaged Food in TH (%)	Locally Grown or Produced in TH (%)	Food Produced Themselves in TH (%)	Relationship Between Food Behaviors and TH	Additional Food Notes
P69	Occasionally	Never	Never	Infrequently	Never	Occasionally	0.77	0.5	0.66	Yes	Because I don't have a refrigerator, I shop for produce more frequently and now grow more of my own.
P70	Infrequently	Infrequently	Infrequently	Infrequently	Infrequently	Infrequently	0.2	0.15	0	Sometimes	Living tiny in a small town on a budget has changed my eating, spending and shopping habits.
P71	Infrequently	Infrequently	Infrequently	Occasionally	Infrequently	Often	0.81	0.3	0.16	Sometimes	
P72	Infrequently	Never	Never	Never	Infrequently	Often	0.56	0.35	0.37	Sometimes	I want to learn how to can and preserve , I used to love juicing every day, etc. but, sometimes in our small space those are not the best options anymore ... we are now on our own land so I garden and we have our own chickens now
P73	Often	Occasionally	Occasionally	Occasionally	Infrequently	Occasionally	0.6	0.45	0.09	Sometimes	
P74	Occasionally	Infrequently	Infrequently	Infrequently	Infrequently	Often	0.3	0.3	0	Yes	Have not had functioning stove/oven in past year. Only cook with microwave. My diet is unfortunately worse than before living tiny because we are still building/finishing our tiny house while we live in it.
P75	Very often	Occasionally	Occasionally	Occasionally	Occasionally	Occasionally	0.79	0.9	0.52	Sometimes	

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P76	Never	Never	Never	Never	Never	Never	1	1	1	Sometimes	
P77	Infrequently	Never	Never	Never	Never	Often	0.5	0.22	0	No	
P78	Very often	Often	Often	Often	Often	Often	0.4	0.5	0.4	No	
P79	Infrequently	Never	Never	Never	Infrequently	Infrequently	0.61	0.3	0.1	Yes	
P80	Often	Occasionally	Occasionally	Occasionally	Occasionally	Often	0.06	0.11	0.11	No	

Food Behaviors in Previous Home

Participant Code	Animal-based Products in Previous Home	Beef or Lamb in Previous Home	Pork in Previous Home	Poultry in Previous Home	Fish or Shellfish in Previous Home	Eggs/Cheese/Dairy in Previous Home	Fresh, Unpackaged Food in Previous Home (%)	Locally Grown or Produced in Previous Home (%)	Food Produced Themselves in Previous Home (%)
P01	Very often	Often	Occasionally	Occasionally	Never	Very often	0.11	0.05	0
P02	Very often	Often	Often	Often	Occasionally	Very often	0.25	0	0
P03	Often	Occasionally	Often	Often	Infrequently	Very often	0.7	1	0.8
P04	Often	Often	Occasionally	Occasionally	Occasionally	Occasionally	0.38	0.53	0.26
P05	Often	Often	Infrequently	Often	Infrequently	Often	0.39	0.19	0
P06	Very often	Occasionally	Occasionally	Very often	Occasionally	Very often	0.3	0.15	0
P07	Very often	Often	Infrequently	Often	Infrequently	Very often	0.4	0.3	0
P08	Infrequently	Never	Never	Never	Occasionally	Occasionally	0.51	0.32	0.51
P09	Very often	Often	Infrequently	Often	Often	Often	0.54	0.42	0.05
P10	Often	Infrequently	Infrequently	Occasionally	Never	Often	0.5	0.72	0.04

Participant Code	Animal-based Products in Previous Home	Beef or Lamb in Previous Home	Pork in Previous Home	Poultry in Previous Home	Fish or Shellfish in Previous Home	Eggs/Cheese/Dairy in Previous Home	Fresh, Unpackaged Food in Previous Home (%)	Locally Grown or Produced in Previous Home (%)	Food Produced Themselves in Previous Home (%)
P11	Often	Infrequently	Infrequently	Occasionally	Occasionally	Often	0.8	0.4	0.1
P12	Infrequently	Never	Never	Never	Never	Occasionally	0.65	0.45	0
P13	Often	Often	Occasionally	Very often	Infrequently	Very often	0.3	0.4	0.6
P14	Very often	Often	Occasionally	Occasionally	Occasionally	Often	0.53	0	0
P15	Occasionally	Occasionally	Occasionally	Often	Infrequently	Very often	0.76	0.92	0.71
P16	Infrequently	Never	Never	Never	Never	Infrequently	0.4	0.6	0
P17	Often	Occasionally	Infrequently	Occasionally	Infrequently	Often	0.29	0.16	0
P18	Occasionally	Infrequently	Never	Infrequently	Never	Infrequently	0.4	0.41	0
P19	Very often	Occasionally	Occasionally	Occasionally	Infrequently	Often	0.7	0.5	0
P20	Often	Occasionally	Occasionally	Infrequently	Occasionally	Often	0.52	0.21	0
P21	Often	Often	Infrequently	Occasionally	Infrequently	Very often	0.27	0.33	0.23
P22	Often	Occasionally	Occasionally	Occasionally	Infrequently	Very often	0.15	0.3	0.02
P23	Very often	Often	Often	Often	Occasionally	Very often	0.77	0.11	0
P24	Occasionally	Infrequently	Never	Infrequently	Infrequently	Often	0.42	0.37	0
P25	Often	Often	Occasionally	Occasionally	Infrequently	Very often	0.05	0	0
P26	Never	Never	Never	Never	Never	Never	0.9	0.9	0.19
P27	Often	Infrequently	Occasionally	Often	Infrequently	Very often	0.2	0.2	0
P28	Very often	Occasionally	Occasionally	Occasionally	Occasionally	Very often	0.3	0.1	0
P29	Often	Occasionally	Infrequently	Infrequently	Occasionally	Often	0.6	0.19	0.52
P30	Never	Never	Never	Never	Never	Never	0.82	0.29	0
P31	Very often	Occasionally	Occasionally	Often	Infrequently	Often	0.53	0.35	0.25
P32	Often	Occasionally	Infrequently	Often	Infrequently	Often	0.9	0.5	0.3
P33	Often	Occasionally	Infrequently	Occasionally	Infrequently	Often	0.5	0.5	0
P34	Occasionally	Occasionally	Infrequently	Infrequently	Infrequently	Often	0.5	0	0.05
P35	Very often	Occasionally	Occasionally	Occasionally	Infrequently	Very often	0.5	0.3	0
P36	Occasionally	Occasionally	Occasionally	Occasionally	Occasionally	Very often	0.15	0.15	0
P37	Often	Occasionally	Infrequently	Occasionally	Very often	Occasionally	0.52	0.2	0
P38	Occasionally	Occasionally	Infrequently	Occasionally	Infrequently	Often	0.91	0.64	0
P39	Infrequently	Never	Never	Never	Never	Often	0.19	0.09	0

Participant Code	Animal-based Products in Previous Home	Beef or Lamb in Previous Home	Pork in Previous Home	Poultry in Previous Home	Fish or Shellfish in Previous Home	Eggs/Cheese/Dairy in Previous Home	Fresh, Unpackaged Food in Previous Home (%)	Locally Grown or Produced in Previous Home (%)	Food Produced Themselves in Previous Home (%)
P40	Very often	Very often	Occasionally	Often	Never	Often	0.13	0.14	0.1
P41	Occasionally	Occasionally	Infrequently	Infrequently	Occasionally	Occasionally	1	0.91	0.73
P42	Often	Occasionally	Occasionally	Often	Never	Often	0.4	0.25	0
P43	Very often	Occasionally	Occasionally	Occasionally	Occasionally	Often	0.1	0.04	0
P44	Often	Occasionally	Occasionally	Often	Occasionally	Often	0.44	0.37	0
P45	Occasionally	Occasionally	Never	Infrequently	Infrequently	Infrequently	0.91	0.26	0.26
P46	Occasionally	Occasionally	Occasionally	Occasionally	Occasionally	Occasionally	0.6	0.8	0.2
P47	Very often	Often	Often	Often	Often	Often	0.7	0.58	0
P48	Often	Never	Infrequently	Occasionally	Never	Often	0.91	0.24	0.05
P49	Often	Infrequently	Occasionally	Occasionally	Occasionally	Often	0.8	0.41	0
P50	Very often	Very often	Occasionally	Occasionally	Infrequently	Very often	0.28	0.29	0.1
P51	Very often	Occasionally	Occasionally	Occasionally	Never	Often	0.2	0.48	0
P52	Very often	Occasionally	Infrequently	Very often	Infrequently	Often	0.6	0.2	0
P53	Often	Occasionally	Occasionally	Occasionally	Occasionally	Often	0.3	0.2	0
P54	Very often	Often	Often	Often	Infrequently	Very often	0.4	0.3	0
P55	Occasionally	Never	Never	Occasionally	Occasionally	Occasionally	0.95	0.95	0.95
P56	Often	Occasionally	Infrequently	Often	Occasionally	Often	0.66	0.52	0.33
P57	Occasionally	Infrequently	Never	Infrequently	Never	Often	0.59	0.28	0.2
P58	Very often	Infrequently	Occasionally	Often	Occasionally	Very often	0.9	0.75	0.4
P59	Often	Infrequently	Occasionally	Often	Infrequently	Very often	0.65	0.3	0
P60	Very often	Occasionally	Occasionally	Very often	Infrequently	Very often	0.2	0.4	0.06
P61	Often	Occasionally	Never	Occasionally	Never	Very often	0.9	0.75	0.75
P62	Often	Infrequently	Occasionally	Often	Infrequently	Very often	0.7	0.35	0
P63	Often	Infrequently	Infrequently	Occasionally	Infrequently	Often	0.45	0.45	0.13
P64	Often	Occasionally	Infrequently	Occasionally	Infrequently	Often	0.3	0.2	0
P65	Often	Occasionally	Infrequently	Often	Never	Occasionally	0.68	0.55	0.55
P66	Occasionally	Occasionally	Occasionally	Occasionally	Occasionally	Often	0.4	0.4	0
P67	Very often	Often	Occasionally	Often	Occasionally	Often	0.61	0.31	0
P68	Often	Occasionally	Occasionally	Very often	Never	Very often	0.1	0.5	0.2
P69	Occasionally	Never	Infrequently	Occasionally	Infrequently	Often	0.5	0.5	0.5

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P70	Occasionally	Occasionally	Occasionally	Occasionally	Occasionally	Occasionally	0.15	0.1	0
P71	Often	Occasionally	Occasionally	Often	Infrequently	Often	0.38	0.25	0.04
P72	Infrequently	Never	Never	Never	Infrequently	Often	0.56	0.22	0.02
P73	Often	Occasionally	Often	Occasionally	Infrequently	Occasionally	0.6	0.45	0.06
P74	Occasionally	Infrequently	Infrequently	Infrequently	Occasionally	Often	0.51	0.5	0
P75	Very often	Occasionally	Occasionally	Occasionally	Occasionally	Very often	0.27	0.72	0
P76	Infrequently	Never	Never	Never	Never	Infrequently	1	1	1
P77	Infrequently	Never	Never	Never	Never	Often	0.5	0.22	0
P78	Very often	Often	Often	Often	Often	Often	0.4	0.5	0.5
P79	Often	Occasionally	Infrequently	Occasionally	Infrequently	Often	0.2	0.1	0
P80	Often	Occasionally	Occasionally	Occasionally	Occasionally	Often	0.06	0.08	0.08

Transportation Behaviors in Tiny Home

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P01	230	0	0	36	9	35	Infrequently	Sometimes	
P02	97	2	0	0	9	27	Never	Yes	Husband has to commute 90 miles because we can't park closer to his job

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P03	10	0	0	0	80	24	Often	No	Building our tiny house meant a change in automobile. Before the tiny house we drove a fuel-efficient, small car. When we needed to move the tiny house we needed a pickup truck. However, we shopped around and looked for a truck adequate for our needs without busting the bank.
P04	253	0	0	0	0	18	Infrequently	Sometimes	I went from a small car to a small truck in order to use the vehicle to transport building supplies.
P05	300	0	0	0	25	18	Infrequently	Yes	
P06	200	0	0	0	20	30	Occasionally	No	
P07	80	0	0	0	4	40	Infrequently	Yes	The only place to live in my tiny house legally was out in the country, away from friends and family. I drive much more now, driving to see them.
P08	40	0	0	0	0	36	Often	Yes	Up a mountain, off the grid, only venture out once in a week or two. Unless I go visit my parents to caregive as needed.
P09	202	0	0	0	50	30	Infrequently	Sometimes	

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P10	95	0	0	0	15	30	Often	Sometimes	I travel to more adventures living tiny- because I have the freedom, but it's usually with lots of people/carpooling
P11	100	0	0	0	0	18	Never	No	
P12	318	0	0	0	25	35	Never	No	
P13	16	0	0	0	0	15	Always	Yes	Location influences more than size. The vehicles I now own are much older, a 2001 and a 1987. They were bought used.
P14	299	17	0	0	0	23	Never	Yes	My tiny home is located closer to work. My choice to work 3 days in semi-retirement rather than 40 hours a week has reduced the trip mileage
P15	300	0	0	0	12	35	Infrequently	Yes	Live further away from work
P16	115	0	0	0	5	18	Often	Sometimes	Lower fuel economy of truck needed to tow home
P17	102	0	0	0	0	24	Occasionally	Sometimes	
P18	0	0	0	302	1	18	Occasionally	Sometimes	
P19	150	0	0	0	20	40	Infrequently	No	I live in a very rural area, so public transportation isn't even an option. Same in my pre-tiny house days.
P20	47	0	0	0	100	30	Infrequently	No	

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P21	241	0	0	0	6	40	Occasionally	Sometimes	I live out in the country so my travel to work is worse.
P22	100	0	0	0	30	30	Occasionally	Yes	More time and money to travel
P23	202	0	0	0	5	20	Never	Sometimes	Have to travel farther for work
P24	317	23	40	2	65	19	Infrequently	Yes	vacation travel hours increased with tiny home
P25	300	40	0	0	0	30	Often	Yes	
P26	102	0	0	0	100	30	Never	No	
P27	60	0	0	0	25	30	Occasionally	Sometimes	Had to travel more for work
P28	500	0	0	0	0	35	Never	No	

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P29	50	0	0	0	0	29	Occasionally	Yes	Because we've lived in various remote locations with our tiny, sometimes we did more driving because we lived tiny. In our current situation I work from home so I'm very rarely in the car and when we go somewhere, we are likely to go together. Before we lived tiny we were both in the car a lot, but the commute was short. And since we've lived in a variety of places with our tiny, it's really impossible to say that tiny vs standard living made the difference - the location of our home was what made the difference. Right now we are in a place where we can live and work right here on the property, so we drive MUCH less - but again - that has nothing to do with living tiny - that's an accident of location where we live right now.
P30	101	0	0	0	0	35	Infrequently	No	
P31	114	0	0	0	0	30	Never	Sometimes	
P32	100	0	0	0	20	27	Infrequently	Yes	
P33	20	0	0	0	0	42	Often	Yes	
P34	200	0	0	0	6	25	Occasionally	Yes	

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P35	304	0	0	0	0	25	Never	Yes	I did have to live for 6 months 60 miles from work due to not having a place to live near my urban work, but now I found a place 7 miles
P36	150	0	0	0	0	24	Infrequently	Yes	
P37	250	0	0	0	40	22	Never	Yes	Living in a rural area means I have to drive further to get to work. Also my change in employment means I drive for my job daily. My previous employment as a teacher only had me driving to and from work.
P38	402	0	0	0	20	35	Never	Yes	In order to find a legal place to park I had to compromise distance to work by moving to a legal community in an unincorporated area
P39	151	0	15	4	12	35	Occasionally	Yes	We live more remotely now. As a result, we've gotten more intentional about doing as many things as possible on one trip. We no longer jump in the car and head out for the first thing we think of. Though we live further away from things, it hasn't added much to our overall car use.
P40	33	0	0	0	2	10	Infrequently	Sometimes	I don’t like that we drive a diesel hog to move, one down fall of mobile lifestyle.

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P41	129	0	0	0	0	28	Occasionally	Yes	I have always worked remotely from where I live and thus travel only for speaking engagements or vacation. Now that I have retired from my consulting business & my 18,000 mile USA tiny house tour, my “traveling” is limited to local vendors by car or bicycle. As I grow much of my own food, I travel even less July thru October.
P42	257	0	0	0	30	35	Never	Yes	
P43	151	0	0	0	0	28	Never	No	
P44	10	0	18	0	100	32	Occasionally	Yes	
P45	98	0	0	0	0	20	Occasionally	No	

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P46	115	0	0	0	0	45	Infrequently	No	The change in my traveling behavior has more to do with where I live now. Before going tiny I lived in a small suburban city where I could mostly bike and walk everywhere. I lived in that same town and had the same traveling habits (mostly bicycling and walking) when I was first living tiny. I now live in an urban/suburban setting and have to drive everyday to work on the freeway. My goal is to pay off my tiny house debt and eventually have more job flexibility in the work I choose so I that I can find work closer to home and be able to bike despite the possibility of reduced hourly wage. I would not have been able to afford to live in an urban center without going tiny. Tiny house living affords the ability to have options (but also involves tradeoffs).
P47	404	0	0	0	150	18	Occasionally	Yes	
P48	250	0	0	0	0	24	Infrequently	No	I am a person who prefers to live in a rural setting, so having to drive more to get things done or take in any entertainment is an accepted trade off.

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P49	30	8	0	0	15	37	Infrequently	No	
P50	16	0	0	0	0	30	Never	No	
P51	50	0	0	0	0	17	Never	No	
P52	30	0	0	0	5	32	Never	Yes	living in our tiny required us to move out of the city where I was able to walk to the university. Having to live rurally requires a 20 minute drive to and from class.
P53	450	0	0	0	0	30	Never	No	
P54	20	0	0	0	0	30	Often	Yes	
P55	51	0	0	0	0	30	Occasionally	No	
P56	303	0	0	0	0	17	Never	Yes	
P57	24	0	0	0	0	35	Infrequently	Sometimes	
P58	198	0	0	0	16	20	Infrequently	No	Financially I could travel more but choose not to. My living environment is peaceful and I don't feel the need to "get away"
P59	69	8	0	0	20	20	Often	Sometimes	My previous job (while in my big home) required lots of travel. Since moving into my tiny home my husband now works from home and I found a job nearby that doesn't require travel but we now travel more for leisure regularly flying.
P60	109	0	0	0	0	15	Never	Yes	

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P61	57	0	0	0	15	55	Often	Yes	Our tiny home has allowed us to live in the ranch. Instead of traveling to and from work daily we now only need to drive to get groceries or take my daughter to school (1mile away).
P62	49	0	0	0	5	6	Occasionally	Yes	We travel frequently with our THOW as part of our documentary and community education project. We stay 1 week to 2 months in different locales.
P63	202	0	0	0	10	25	Often	Yes	
P64	200	0	0	0	6	28	Occasionally	Sometimes	Because our tiny house is parked on a rural farm we have no other option than to drive to get anywhere. When we lived in the city we had more access to public transit, riding our bikes to places, or carpooling
P65	48	0	0	0	0	30	Never	No	
P66	151	0	0	0	100	20	Infrequently	No	
P67	24	0	0	0	16	20	Occasionally	Yes	I now drive my golf cart or bike usually. The average mike per hour on my car reads 23. I rarely leave the island.
P68	30	0	0	0	5	35	Occasionally	Yes	

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P69	44	0	0	0	100	38	Often	Yes	After downsizing and changing office locations, I was able to use an electric truck. Plug it in and go!
P70	175	0	0	0	6	48	Infrequently	Sometimes	
P71	0	0	0	0	0	25	Never	Yes	We ride bicycle for almost all our needs.
P72	137	0	0	0	8	25	Occasionally	No	
P73	28	0	0	0	15	15	Infrequently	No	
P74	200	0	0	0	8	50	Never	Sometimes	At the same time I moved into a tiny house, I started a new job which changes location every month. The changing locations has a far far greater impact on my increased driving than living tiny and in the country does.
P75	50	0	0	0	12	28	Occasionally	No	
P76	46	0	0	0	8	25	Never	Sometimes	I travel with a dog on road trips
P77	260	0	0	0	0	40	Never	No	
P78	100	0	0	0	10	40	Occasionally	No	

Participant Code	Weekly Car Distance in TH (miles)	Weekly Motorcycle Distance in TH	Weekly Train Distance in TH	Weekly Bus Distance in TH	Annual hours Flown in TH	Fuel Economy of Car in TH (mpg)	Carpool in TH	Relationship Between Transportation Behaviors and TH	Additional Transportation Notes
P79	118	0	0	0	0	45	Infrequently	Yes	Since living in my tiny house, i have started driving a more fuel efficient car, because of my preference to live more sustainably.
P80	103	0	0	0	0	50	Never	No	

Transportation Behaviors in Previous Home

Participant Code	Weekly Car Distance in Previous Home	Weekly Motorcycle Distance in Previous Home	Weekly Train Distance in Previous Home	Weekly Bus Distance in Previous Home	Hours Flown in Previous Home	Fuel Economy of Car in Previous Home (mpg)	Carpool in Previous Home
P01	59	0	0	0	30	35	Never
P02	104	0	0	0	4	25	Never
P03	50	0	0	0	80	32	Often
P04	213	0	0	0	0	25	Occasionally
P05	400	0	0	0	25	12	Infrequently
P06	300	0	0	0	20	30	Occasionally
P07	20	0	0	0	4	40	Never
P08	171	0	0	0	16	36	Never
P09	199	0	0	0	50	30	Infrequently
P10	100	0	0	0	15	12	Infrequently
P11	30	0	0	0	100	18	Never
P12	89	0	0	0	25	35	Never
P13	31	0	0	0	0	25	Always
P14	403	93	0	0	0	35	Never
P15	125	0	0	0	6	35	Infrequently
P16	60	0	0	0	5	33	Infrequently

Participant Code	Weekly Car Distance in Previous Home	Weekly Motorcycle Distance in Previous Home	Weekly Train Distance in Previous Home	Weekly Bus Distance in Previous Home	Hours Flown in Previous Home	Fuel Economy of Car in Previous Home (mpg)	Carpool in Previous Home
P17	196	0	0	0	10	24	Never
P18	410	0	0	82	1	18	Occasionally
P19	201	0	0	0	20	30	Infrequently
P20	76	0	0	0	100	30	Infrequently
P21	139	0	0	0	6	40	Infrequently
P22	100	0	0	0	30	30	Occasionally
P23	500	0	0	0	0	15	Never
P24	275	0	0	0	35	24	Infrequently
P25	46	0	0	0	0	15	Often
P26	298	0	0	0	500	20	Never
P27	140	0	0	0	40	30	Occasionally
P28	500	0	0	0	0	35	Never
P29	101	0	0	0	0	29	Occasionally
P30	255	0	0	0	0	35	Infrequently
P31	124	0	0	0	0	30	Never
P32	100	0	0	0	10	27	Infrequently
P33	100	0	0	0	0	20	Infrequently
P34	150	0	0	0	6	25	Occasionally
P35	450	0	0	0	0	25	Never
P36	325	50	0	0	7	16	Never
P37	100	40	0	0	20	19	Occasionally
P38	200	0	0	0	20	35	Never
P39	125	0	20	4	12	35	Infrequently
P40	106	0	0	0	1	20	Never
P41	229	0	0	0	8	7	Occasionally
P42	100	0	0	0	150	35	Never
P43	116	0	0	0	0	25	Never
P44	200	0	0	0	100	26	Never
P45	44	0	0	0	0	20	Occasionally
P46	20	0	0	0	0	45	Often
P47	404	0	0	0	150	18	Occasionally
P48	500	0	0	0	0	24	Never

Participant Code	Weekly Car Distance in Previous Home	Weekly Motorcycle Distance in Previous Home	Weekly Train Distance in Previous Home	Weekly Bus Distance in Previous Home	Hours Flown in Previous Home	Fuel Economy of Car in Previous Home (mpg)	Carpool in Previous Home
P49	150	17	0	0	15	37	Never
P50	65	0	0	0	0	30	Never
P51	219	0	0	0	30	20	Never
P52	10	0	0	0	5	29	Never
P53	450	0	0	0	10	30	Never
P54	100	0	0	0	30	30	Infrequently
P55	51	0	0	0	0	30	Occasionally
P56	303	0	0	0	200	17	Never
P57	94	0	0	0	0	35	Never
P58	300	0	0	0	8	20	Occasionally
P59	110	60	0	0	40	20	Occasionally
P60	300	0	0	0	0	15	Never
P61	198	0	0	0	15	55	Infrequently
P62	25	0	0	0	0	12	Infrequently
P63	0	0	0	444	10	25	Occasionally
P64	200	0	0	0	6	28	Occasionally
P65	43	0	0	0	0	30	Never
P66	0	0	93	0	200	20	Never
P67	110	0	0	0	16	17	Occasionally
P68	200	0	0	0	5	35	Infrequently
P69	151	0	0	0	100	38	Occasionally
P70	0	0	35	0	12	48	Infrequently
P71	30	0	0	0	0	10	Never
P72	48	0	0	0	8	25	Occasionally
P73	33	0	0	0	15	15	Infrequently
P74	50	0	0	0	10	20	Never
P75	148	0	0	0	12	18	Never
P76	319	0	0	0	8	25	Never
P77	146	0	0	0	0	24	Never

Participant Code	Weekly Car Distance in Previous Home	Weekly Motorcycle Distance in Previous Home	Weekly Train Distance in Previous Home	Weekly Bus Distance in Previous Home	Hours Flown in Previous Home	Fuel Economy of Car in Previous Home (mpg)	Carpool in Previous Home
P78	100	0	0	0	10	40	Occasionally
P79	146	0	0	0	0	30	Occasionally
P80	22	32	0	0	0	14	Never

Recycling Behaviors in Tiny Homes and Previous Homes

Participant Code	Paper Recycling in Tiny Home	Paper Recycling in Previous Home	Plastic Recycling in Tiny Home	Plastic Recycling in Previous Home	Trash Generation in Tiny Home	Trash Generation in Previous Home	Relationship Between Recycling Behaviors and Tiny Home	Additional Recycling Notes
P01	Most	Little to none	Most	Little to none	Much less	About the same	Sometimes	
P02	Some	Half	Little to none	Little to none	Less	About the same	Sometimes	
P03	All	All	Most	Most	Less	Less	Sometimes	
P04	All	Some	All	Some	Much less	About the same	Sometimes	I live alone now and make conscious decisions to reduce the amount of garbage produced.
P05	Little to none	Little to none	Little to none	Little to none	Much less	Less	No	
P06	Little to none	Some	Little to none	Some	Much less	About the same	No	The city I live in is difficult to recycle.
P07	Most	All	Little to none	Most	Less	Less	Yes	There is not a recycling program out in the country where I live in my tiny. We have a dumpster where everything goes. I take paper to be recycled when I drive into the city but I haven't been able to get any of my neighbors to give me theirs to recycle. I am also trying composting food scraps.
P08	All	Most	All	Most	Much less	Less	Yes	Not much storage not much trash.
P09	All	All	All	All	Less	Less	No	

Participant Code	Paper Recycling in Tiny Home	Paper Recycling in Previous Home	Plastic Recycling in Tiny Home	Plastic Recycling in Previous Home	Trash Generation in Tiny Home	Trash Generation in Previous Home	Relationship Between Recycling Behaviors and Tiny Home	Additional Recycling Notes
P10	All	All	All	All	Much less	About the same	Sometimes	
P11	Half	Most	Some	Most	About the same	About the same	No	
P12	Most	Most	All	All	About the same	About the same	No	
P13	All	All	All	All	Much less	Much less	No	It requires ability to store outside in the tiny, I take it to the recycle center and dump once a month.
P14	All	All	All	All	Much less	Much less	No	I have always had wood heat so the disposal of paper and plastic was used for heat in the winter and during the summer the paper was utilized as a starter for frequent campfires in the yard. This persists still
P15	All	Some	All	Some	Much less	About the same	Sometimes	
P16	Most	Some	Most	Some	Much less	Less	Sometimes	
P17	Little to none	Little to none	Half	Some	Much less	About the same	Sometimes	Our City sorts and recycles ALL trash. 57+% Diversion rate, without customer sorting.
P18	All	All	All	All	Less	About the same	Sometimes	
P19	All	All	Most	Most	Much less	Less	No	I would recycle all plastic but our local county solid waste office doesn't accept it all. I would recycle everything if possible. No change from pre-tiny house to now.

Participant Code	Paper Recycling in Tiny Home	Paper Recycling in Previous Home	Plastic Recycling in Tiny Home	Plastic Recycling in Previous Home	Trash Generation in Tiny Home	Trash Generation in Previous Home	Relationship Between Recycling Behaviors and Tiny Home	Additional Recycling Notes
P20	Most	Little to none	Most	Little to none	Less	About the same	Yes	Our last neighborhood did not offer recycling. We have become more conscious about recycling recently.
P21	Half	Most	Little to none	Half	Much less	Less	No	My city is not a recycling friendly area. I recycle by making things out of trash. My whole tiny house is 90 percent by weight, salvage.
P22	Little to none	Little to none	Little to none	Little to none	Much less	About the same	No	
P23	Little to none	Little to none	Little to none	Little to none	Much less	About the same	Yes	We have to deal with our own trash now as opposed to the county picking it up in our previous home. Also, my HOA did not provide recycling bins.
P24	Most	Most	Most	Most	Much less	Less	No	
P25	Little to none	Little to none	Little to none	Little to none	Much less	More	Yes	
P26	All	Most	All	All	Much less	Much less	No	
P27	All	Most	All	Most	Much less	About the same	Sometimes	
P28	All	All	All	All	Much less	Much less	No	

Participant Code	Paper Recycling in Tiny Home	Paper Recycling in Previous Home	Plastic Recycling in Tiny Home	Plastic Recycling in Previous Home	Trash Generation in Tiny Home	Trash Generation in Previous Home	Relationship Between Recycling Behaviors and Tiny Home	Additional Recycling Notes
P29	Most	Some	All	Most	Much less	About the same	Yes	We went zero waste as a way to handle the realities of trash in a tiny home of only 125 sq ft. So it's not about how much we recycled - that's probably been pretty much consistent with when we lived in a small house and recycling where recycling was curbside and easy. The big change is in how much we allow single use plastics and disposable products into our home now. We no longer use napkins, paper towels, and we use about 75% less toilet paper than we used to. We no longer purchase plastic bags for food use, or plastic wrap and foil and that sort of thing. We long longer purchase disposable plates, napkins, plastic flatware. We rarely eat out at places where they will place the food in paper or disposable plates/forks. We avoid straws and such. We shop at places like Aldi and Sharp Shopper where you bring your own bags.
P30	All	All	All	All	Much less	Much less	No	
P31	All	Half	All	Half	Much less	About the same	Yes	Compost!!!
P32	Little to none	Most	Little to none	Most	Much less	Less	Yes	
P33	Most	Some	All	Some	Much less	About the same	Yes	It is MUCH easier to recycle in a tiny home - and since we are purchasing less, there is less to recycle

Participant Code	Paper Recycling in Tiny Home	Paper Recycling in Previous Home	Plastic Recycling in Tiny Home	Plastic Recycling in Previous Home	Trash Generation in Tiny Home	Trash Generation in Previous Home	Relationship Between Recycling Behaviors and Tiny Home	Additional Recycling Notes
P34	Most	Some	Most	Some	Much less	About the same	Yes	We also recycle aluminum and glass
P35	Little to none	Half	Little to none	Half	About the same	About the same	Yes	I don't have the room to store for recycling in my tiny house now
P36	Most	Most	Most	Most	Much less	About the same	Yes	
P37	Half	Little to none	Most	Some	Much less	About the same	Yes	Our one recycling area in my closest town recently closed.
P38	Most	Most	All	All	Less	About the same	Sometimes	There is not always space to recycle
P39	All	All	All	All	Much less	About the same	No	We have always recycled as much as possible for where we live. Before, it was easier with curbside pickup every week. Now, we have to put more effort into it. Collecting it, then taking it ourselves to a recycling center--but that isn't a problem for us. We just have to put a little more thought into recycling.
P40	Half	All	Half	All	Much less	About the same	Yes	I wish recycling was available where we are currently parked. When we were in (location) we recycled everything because park had recycling.

Participant Code	Paper Recycling in Tiny Home	Paper Recycling in Previous Home	Plastic Recycling in Tiny Home	Plastic Recycling in Previous Home	Trash Generation in Tiny Home	Trash Generation in Previous Home	Relationship Between Recycling Behaviors and Tiny Home	Additional Recycling Notes
P41	All	Most	All	All	Much less	Much less	Yes	I have always been an environmentalist. My concern about climate change & GHG emission impact on humanity's survival is what inspired me to design my own non-toxic material, water harvesting, solar (non fossil fuel dependent) tiny home 6 years ago. My tiny home was meant to be a 'model' for how to design a sustainable lifestyle affordably (under $20k). It has inspired tens of thousands of people who, like me, overcame health issues, limited financial means and limited construction experience to create a healthy, sustainable lifestyle that can travel with you almost anywhere while providing freedom from a consumptive debt culture society.
P42	Most	Some	All	All	Much less	Much less	Yes	
P43	Little to none	Some	Little to none	Some	Less	Less	Yes	The RV park I live in only has recycling for cans and there are no public recycling locations in town. I almost got a ticket for putting my recycling into a local condominium's recycling bins when one of the residents called the police on me! Very frustrating!
P44	Most	Some	All	Some	Less	About the same	Yes	

Participant Code	Paper Recycling in Tiny Home	Paper Recycling in Previous Home	Plastic Recycling in Tiny Home	Plastic Recycling in Previous Home	Trash Generation in Tiny Home	Trash Generation in Previous Home	Relationship Between Recycling Behaviors and Tiny Home	Additional Recycling Notes
P45	Most	Most	Most	Most	Much less	Much less	No	
P46	All	All	Most	Most	Much less	More	No	
P47	Most	Most	Most	Most	About the same	About the same	Sometimes	
P48	Little to none	Some	Little to none	Some	Much less	Much less	Sometimes	
P49	All	All	All	All	Less	Less	No	
P50	Most	Most	Little to none	Little to none	Much less	About the same	No	
P51	Little to none	Little to none	Little to none	Little to none	About the same	About the same	No	
P52	All	Little to none	All	Little to none	Much less	Less	Yes	back to trying to save the world while living in our tiny
P53	Most	Most	Most	Most	Much less	Much less	No	
P54	All	Little to none	Most	Little to none	Much less	Much more	Yes	
P55	All	Most	All	Most	Much less	More	Yes	I use no plastics in my tiny house. I use glass.
P56	Some	Most	Most	Most	Much less	About the same	Yes	
P57	Most	Half	Some	Little to none	Much less	Much less	No	
P58	All	All	All	All	Much less	Much less	Sometimes	Again, living in my tiny house has made me more aware of storing, consuming, and disposing.
P59	Most	Most	Most	Most	Much less	About the same	No	
P60	Most	Little to none	Some	Little to none	Much less	About the same	Yes	
P61	All	All	All	All	Much less	Less	No	

Participant Code	Paper Recycling in Tiny Home	Paper Recycling in Previous Home	Plastic Recycling in Tiny Home	Plastic Recycling in Previous Home	Trash Generation in Tiny Home	Trash Generation in Previous Home	Relationship Between Recycling Behaviors and Tiny Home	Additional Recycling Notes
P62	All	All	All	Most	Much less	Less	Sometimes	We generate at least 3x as much recycling as we do trash. Our goal is to reduce waste
P63	All	All	All	All	Much less	Less	Yes	
P64	All	All	All	Most	Much less	About the same	Sometimes	I have always been environmentally-minded. I have worked to recycle and diminish my waste throughout my life so it wasn't a huge change once we moved tiny. However, being able to compost greatly diminished the amount of trash we generate.
P65	Most	Some	Most	Some	About the same	About the same	Sometimes	Our new town has recycle pick up, the old one didn't
P66	All	All	All	All	About the same	About the same	No	
P67	Some	Some	Some	Some	About the same	Much more	No	No room for recycling bins if I don't use it everyday it's gotta go
P68	Some	Most	Some	Most	Much less	About the same	Sometimes	Do not have curbside recycling in tiny home
P69	All	All	All	All	Less	Less	Yes	For me, it was key to having good city recycling programs to support glass, plastics, paper recycling.
P70	All	Most	All	Most	Much less	About the same	Sometimes	
P71	Most	Little to none	Most	Little to none	Much less	About the same	Yes	

Participant Code	Paper Recycling in Tiny Home	Paper Recycling in Previous Home	Plastic Recycling in Tiny Home	Plastic Recycling in Previous Home	Trash Generation in Tiny Home	Trash Generation in Previous Home	Relationship Between Recycling Behaviors and Tiny Home	Additional Recycling Notes
P72	Some	Some	Some	Some	Less	About the same	Sometimes	When we first moved into our tiny home we recycled religiously ... we only took trash to the curb 1 - 2 times a month ... in the past two months our company quit offering recycling and we have yet to find a good option for recycling nearby... I also began composting when we moved to our tiny house
P73	Some	Some	Some	Little to none	Less	About the same	Sometimes	
P74	Most	Most	Most	Most	Much less	Less	Yes	When moving often, access to recycling is even more difficult than access to trash services.
P75	All	Most	All	Some	Less	About the same	Yes	
P76	All	All	All	All	Much less	Much less	Sometimes	
P77	Half	Half	Most	Most	Less	About the same	Sometimes	
P78	Most	Most	Most	Most	Much less	Much less	No	
P79	Most	Most	Most	Most	Less	About the same	Yes	
P80	All	Most	All	All	Much less	About the same	Sometimes	I recycle because I'm in the middle of the mountains without trash service. Separating everything out and going once a year ends up being very cheap.

Purchasing Behaviors in Tiny Home

Participant Code	Household Finishing Products Purchases in TH	Clothing Purchases in TH	Appliance Purchases in TH	Electronic Purchases in TH	Book Purchases in TH	Second-hand Goods in TH	Relationship Between Purchasing Behaviors and TH	Additional Purchasing Notes
P01	Average	Above average	Infrequently	Occasionally	Often	Effort	Yes	I would make impulsive expenses purchases all the time before I lived tiny. I still have those tendencies, but I am much more mindful now of the quantity and I think before I buy now. It's a pretty significant difference, this by far has been the biggest change I have made in my life since going tiny.
P02	Not much	Not much	Never, rarely	Never, rarely	Infrequently	Big effort	Sometimes	
P03	Not much	Not much	Infrequently	Occasionally	Often	Effort	Yes	
P04	Not much	Not much	Never, rarely	Never, rarely	Never, rarely	Big effort	Yes	All current furniture are second hand. All appliances, if you can even call them that, are more like 30th hand, often bought from antique shops and do not use electricity. I got rid of 75% of my clothes when downsizing and more only replace worn out items.
P05	Minimal to none	Not much	Never, rarely	Never, rarely	Never, rarely	Big effort	Yes	
P06	Not much	Not much	Never, rarely	Often	Never, rarely	Effort	Yes	

Participant Code	Household Finishing Products Purchases in TH	Clothing Purchases in TH	Appliance Purchases in TH	Electronic Purchases in TH	Book Purchases in TH	Second-hand Goods in TH	Relationship Between Purchasing Behaviors and TH	Additional Purchasing Notes
P07	Minimal to none	Minimal to none	Infrequently	Infrequently	Infrequently	Effort	Yes	I don't buy books, even used ones, gadgets, or 'knick-knacks' without a lot of thought because space is limited. I think about purchases for weeks and even months.
P08	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Big effort	Yes	No cell towers, no internet (unless visiting parents or friends in town)
P09	Average	Not much	Infrequently	Never, rarely	Infrequently	Big effort	Sometimes	
P10	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Occasionally	Effort	Yes	
P11	Minimal to none	Minimal to none	Infrequently	Infrequently	Infrequently	Effort	Yes	
P12	Not much	Not much	Infrequently	Infrequently	Occasionally	Effort	Yes	Trying to reduce consumption and waste. Much more aware of use of plastic.
P13	Minimal to none	Minimal to none	Infrequently	Infrequently	Never, rarely	Big effort	Yes	Library or digital books, less desire to binge shop, limited space helps that
P14	Minimal to none	Not much	Never, rarely	Never, rarely	Never, rarely	Big effort	Yes	craigslist and yard sales helped in my DIY tiny house builds and to furnish them. Goodwill is my go to for clothing. I often rescue large items from the curb side trash to reinvent into curio items.
P15	Minimal to none	Minimal to none	Infrequently	Never, rarely	Never, rarely	Big effort	Sometimes	
P16	Not much	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Big effort	Sometimes	

Participant Code	Household Finishing Products Purchases in TH	Clothing Purchases in TH	Appliance Purchases in TH	Electronic Purchases in TH	Book Purchases in TH	Second-hand Goods in TH	Relationship Between Purchasing Behaviors and TH	Additional Purchasing Notes
P17	Minimal to none	Minimal to none	Never, rarely	Infrequently	Infrequently	Big effort	Yes	When I upgrade electronics, I usually gift the old ones to friends who could otherwise not afford them. I buy only digital books and mostly digital magazines.
P18	Minimal to none	Above average	Infrequently	Infrequently	Infrequently	Big effort	Sometimes	
P19	Minimal to none	Minimal to none	Infrequently	Infrequently	Infrequently	Effort	Yes	I used to love to own books, but moving to a tiny house has changed that. Now I mostly borrow. I also have limited clothing storage, and storage for just about everything, so that definitely factors in to decisions. Ditto appliances. No room for every little convenience.
P20	Not much	Average	Never, rarely	Occasionally	Never, rarely	Effort	Sometimes	
P21	Minimal to none	Minimal to none	Never, rarely	Infrequently	Never, rarely	Big effort	Yes	I have always used second hand everything where possible. I loved thrift stores and dumpster diving but now I don't have room so only get what I need.
P22	Not much	Minimal to none	Infrequently	Infrequently	Infrequently	No effort	Sometimes	
P23	Minimal to none	Not much	Never, rarely	Never, rarely	Never, rarely	Big effort	Yes	On a lesser income now, we can't afford to buy new. Also, second-hand items were hard to find in our previous community.
P24	Not much	Not much	Never, rarely	Never, rarely	Never, rarely	Effort	Sometimes	

Participant Code	Household Finishing Products Purchases in TH	Clothing Purchases in TH	Appliance Purchases in TH	Electronic Purchases in TH	Book Purchases in TH	Second-hand Goods in TH	Relationship Between Purchasing Behaviors and TH	Additional Purchasing Notes
P25	Not much	Average	Infrequently	Often	Occasionally	No effort	No	
P26	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Effort	No	
P27	Not much	Minimal to none	Never, rarely	Infrequently	Never, rarely	Effort	Sometimes	
P28	Not much	Not much	Infrequently	Never, rarely	Infrequently	No effort	No	
P29	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Big effort	Yes	In our tiny house the fridge broke and we did not replace it. In our workshop we got rid of the big huge fridge and replaced it with a much smaller more energy and space efficient model. When we converted our bus to a skoolie we purchased a small energy efficient model and it's a very nice one. So it's hard to answer those questions because we've lived without refrigeration for a while, and bought a new one to downsize the one in our workshop
P30	Minimal to none	Minimal to none	Infrequently	Infrequently	Never, rarely	Effort	Yes	
P31	Not much	Minimal to none	Never, rarely	Never, rarely	Occasionally	Big effort	Yes	
P32	Not much	Average	Infrequently	Infrequently	Never, rarely	Big effort	Yes	
P33	Minimal to none	Minimal to none	Infrequently	Infrequently	Never, rarely	Effort	Yes	
P34	Not much	Minimal to none	Infrequently	Never, rarely	Never, rarely	Effort	Yes	
P35	Minimal to none	Not much	Never, rarely	Never, rarely	Infrequently	No effort	Yes	

Participant Code	Household Finishing Products Purchases in TH	Clothing Purchases in TH	Appliance Purchases in TH	Electronic Purchases in TH	Book Purchases in TH	Second-hand Goods in TH	Relationship Between Purchasing Behaviors and TH	Additional Purchasing Notes
P36	Not much	Not much	Infrequently	Infrequently	Occasionally	Big effort	Yes	
P37	Not much	Minimal to none	Infrequently	Often	Infrequently	Big effort	Yes	E-readers have replaced paper in my home. I also use an iPad with Apple Pencil at work to replace the many pads of paper I used to consume weekly.
P38	Average	Not much	Never, rarely	Never, rarely	Never, rarely	No effort	Yes	there are no impulse buying - may put my hand on something but quickly realize there is no place to put it
P39	Minimal to none	Not much	Never, rarely	Never, rarely	Infrequently	Big effort	Yes	Our purchasing habits are influenced in two ways by living tiny: First, we don't have room for random purchases. We give a lot of thought to what we bring in here, and have to know it has a place and purpose. Second, living in a tiny house allowed us to quit our jobs, so we have a lot less discretionary money to spend.
P40	Minimal to none	Not much	Infrequently	Never, rarely	Never, rarely	Effort	Sometimes	
P41	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Big effort	Yes	My habits in the last decade have always been about reduction, recycling, reusing, repairing, reclaiming, upcycling, etc.
P42	Not much	Minimal to none	Infrequently	Never, rarely	Never, rarely	Effort	Yes	
P43	Minimal to none	Minimal to none	Never, rarely	Infrequently	Never, rarely	Effort	Sometimes	

Participant Code	Household Finishing Products Purchases in TH	Clothing Purchases in TH	Appliance Purchases in TH	Electronic Purchases in TH	Book Purchases in TH	Second-hand Goods in TH	Relationship Between Purchasing Behaviors and TH	Additional Purchasing Notes
P44	Not much	Average	Infrequently	Occasionally	Infrequently	No effort	Yes	I consume media, books, and music entirely online.
P45	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Effort	No	
P46	Not much	Average	Infrequently	Never, rarely	Infrequently	Effort	Yes	I bought more stuff than I needed when I lived in a regular house. I wasn't a heavy consumer before I lived tiny but I still amassed things I didn't really need. I had more clothes, camping gear, kitchen tools, and food than I really needed to have on hand. If I make a purchase now, I am very measured about it. I buy things I need and--if possible--only quality items that will last
P47	Average	Minimal to none	Never, rarely	Infrequently	Never, rarely	Big effort	Yes	

Participant Code	Household Finishing Products Purchases in TH	Clothing Purchases in TH	Appliance Purchases in TH	Electronic Purchases in TH	Book Purchases in TH	Second-hand Goods in TH	Relationship Between Purchasing Behaviors and TH	Additional Purchasing Notes
P48	Minimal to none	Minimal to none	Infrequently	Never, rarely	Often	Big effort	Yes	My purchasing behaviors are directly influenced by lining in a tiny home, due to space available to put things, of course. And I have a checklist that a purchased item must pass before I'll spend money and space on it. My purchasing behaviors are also directly influenced by my available disposable income. Which is almost non-existent. So getting great things second hand is the way I go. Just swapped out my love seat for a different one, for only $25 at a local auction. Eureka!
P49	Not much	Not much	Infrequently	Often	Never, rarely	Effort	Sometimes	
P50	Minimal to none	Average	Infrequently	Never, rarely	Never, rarely	No effort	No	
P51	Minimal to none	Not much	Infrequently	Never, rarely	Occasionally	No effort	Sometimes	
P52	Average	Minimal to none	Infrequently	Never, rarely	Infrequently	Effort	Yes	Living tiny now means QUALITY over QUANTITY so now when replacing a new jacket that has been worn to death I now go for quality brands that will last with age and style as opposed to reusing from second hand stores that will likely be over used after a year of having it. For most situations

Participant Code	Household Finishing Products Purchases in TH	Clothing Purchases in TH	Appliance Purchases in TH	Electronic Purchases in TH	Book Purchases in TH	Second-hand Goods in TH	Relationship Between Purchasing Behaviors and TH	Additional Purchasing Notes
P53	Average	Average	Infrequently	Never, rarely	Never, rarely	Effort	No	
P54	Not much	Minimal to none	Infrequently	Infrequently	Infrequently	Big effort	Yes	
P55	Minimal to none	Not much	Never, rarely	Never, rarely	Never, rarely	Effort	Yes	I dont buy very much I dont have room
P56	Not much	Minimal to none	Infrequently	Infrequently	Never, rarely	Effort	Yes	
P57	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Big effort	Sometimes	
P58	Not much	Minimal to none	Infrequently	Never, rarely	Infrequently	Big effort	Yes	I love being more mindful of my overall consumption, purchases, collection of things. Everything now has a reason and a purpose.
P59	Minimal to none	Average	Never, rarely	Never, rarely	Never, rarely	Big effort	Yes	
P60	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Infrequently	Big effort	Yes	
P61	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Big effort	Sometimes	
P62	Minimal to none	Minimal to none	Never, rarely	Infrequently	Never, rarely	Effort	Yes	Monthly we spend on food, gas, phone/wifi.
P63	Not much	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Big effort	Sometimes	

Participant Code	Household Finishing Products Purchases in TH	Clothing Purchases in TH	Appliance Purchases in TH	Electronic Purchases in TH	Book Purchases in TH	Second-hand Goods in TH	Relationship Between Purchasing Behaviors and TH	Additional Purchasing Notes
P64	Minimal to none	Not much	Never, rarely	Never, rarely	Never, rarely	Big effort	Yes	Living in a tiny house has reduced my shopping and spending habits primarily because I do not have space for more stuff! Being limited in the space, storage, and organization around me, I no longer make any impulse purchases. I think very carefully about how much I want or need something and really asses it before finally deciding to add it to my home (or put it back).
P65	Minimal to none	Not much	Infrequently	Infrequently	Occasionally	Effort	Yes	Purchasing habits changed due to lack of place to put anything
P66	Minimal to none	Minimal to none	Infrequently	Often	Occasionally	No effort	Sometimes	I know I can't purchase large goods. So I keep with the things I have or buy higher quality things because I know they have to last. I only have so much space so it's worth it to buy more expensive things
P67	A lot	Minimal to none	Never, rarely	Occasionally	Infrequently	Big effort	Sometimes	
P68	Minimal to none	Minimal to none	Infrequently	Never, rarely	Never, rarely	Big effort	Sometimes	
P69	Minimal to none	Not much	Never, rarely	Infrequently	Never, rarely	Big effort	Yes	I am able to build my own furniture and repair stuff, so don't need to buy it. Plus there's hardly any room for furniture, appliances, clothes, books and the like.

Participant Code	Household Finishing Products Purchases in TH	Clothing Purchases in TH	Appliance Purchases in TH	Electronic Purchases in TH	Book Purchases in TH	Second-hand Goods in TH	Relationship Between Purchasing Behaviors and TH	Additional Purchasing Notes
P70	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Big effort	Yes	
P71	Not much	Minimal to none	Never, rarely	Infrequently	Infrequently	Big effort	Yes	
P72	Not much	Not much	Never, rarely	Never, rarely	Occasionally	Big effort	Sometimes	
P73	Not much	Minimal to none	Never, rarely	Often	Occasionally	Effort	Yes	
P74	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Occasionally	Big effort	No	
P75	Not much	Minimal to none	Never, rarely	Occasionally	Infrequently	No effort	No	
P76	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Infrequently	Big effort	Yes	
P77	Not much	Average	Infrequently	Infrequently	Infrequently	No effort	Yes	
P78	Minimal to none	Minimal to none	Infrequently	Infrequently	Often	Effort	No	
P79	Not much	Not much	Infrequently	Infrequently	Occasionally	Effort	Yes	I spend much less time and money on home and yard maintenance.
P80	Minimal to none	Not much	Never, rarely	Never, rarely	Infrequently	Effort	No	

Purchasing Behaviors in Previous Home

Participant Code	Household Finishing Products Purchases in Previous Home	Clothing Purchases in Previous Home	Appliance Purchases in Previous Home	Electronic Purchases in Previous Home	Book Purchases in Previous Home	Second-hand Goods in Previous Home
P01	A lot	A lot	Infrequently	Often	Very often	No effort
P02	Average	Average	Infrequently	Occasionally	Occasionally	Big effort
P03	Not much	Not much	Infrequently	Occasionally	Often	Effort
P04	Average	Average	Infrequently	Occasionally	Infrequently	Effort

Participant Code	Household Finishing Products Purchases in Previous Home	Clothing Purchases in Previous Home	Appliance Purchases in Previous Home	Electronic Purchases in Previous Home	Book Purchases in Previous Home	Second-hand Goods in Previous Home
P05	Minimal to none	Average	Infrequently	Never, rarely	Never, rarely	Big effort
P06	Average	Above average	Never, rarely	Very often	Occasionally	Effort
P07	Minimal to none	Minimal to none	Infrequently	Infrequently	Occasionally	No effort
P08	Not much	Average	Infrequently	Infrequently	Infrequently	Effort
P09	Average	Average	Occasionally	Never, rarely	Occasionally	Big effort
P10	Average	Average	Infrequently	Occasionally	Occasionally	Effort
P11	Above average	A lot	Occasionally	Often	Occasionally	Effort
P12	Average	Average	Occasionally	Infrequently	Often	No effort
P13	Average	Not much	Infrequently	Infrequently	Never, rarely	Effort
P14	Not much	Not much	Never, rarely	Never, rarely	Never, rarely	Big effort
P15	Above average	Average	Infrequently	Occasionally	Occasionally	Effort
P16	Average	Not much	Often	Occasionally	Infrequently	Big effort
P17	Average	Average	Occasionally	Often	Very often	Effort
P18	Average	A lot	Infrequently	Infrequently	Infrequently	Big effort
P19	Average	Not much	Infrequently	Infrequently	Occasionally	Effort
P20	Not much	Above average	Infrequently	Occasionally	Never, rarely	No effort
P21	Minimal to none	Minimal to none	Infrequently	Infrequently	Never, rarely	Big effort
P22	Average	Above average	Infrequently	Infrequently	Often	No effort
P23	Not much	Above average	Never, rarely	Infrequently	Never, rarely	Effort
P24	Not much	Not much	Never, rarely	Never, rarely	Never, rarely	Effort
P25	Average	Average	Infrequently	Often	Occasionally	No effort
P26	Not much	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Effort
P27	Above average	Average	Infrequently	Occasionally	Never, rarely	No effort
P28	Not much	Average	Infrequently	Never, rarely	Infrequently	No effort
P29	Minimal to none	Minimal to none	Infrequently	Never, rarely	Never, rarely	Effort
P30	Minimal to none	Minimal to none	Infrequently	Infrequently	Never, rarely	Effort
P31	Not much	Not much	Never, rarely	Never, rarely	Occasionally	Big effort
P32	Average	Above average	Infrequently	Occasionally	Never, rarely	Big effort
P33	Not much	Average	Infrequently	Infrequently	Very often	Effort

Participant Code	Household Finishing Products Purchases in Previous Home	Clothing Purchases in Previous Home	Appliance Purchases in Previous Home	Electronic Purchases in Previous Home	Book Purchases in Previous Home	Second-hand Goods in Previous Home
P34	Average	Average	Infrequently	Infrequently	Never, rarely	Effort
P35	Average	Average	Infrequently	Occasionally	Occasionally	No effort
P36	Not much	Not much	Occasionally	Often	Occasionally	Effort
P37	Average	Average	Infrequently	Often	Often	Effort
P38	Average	Above average	Infrequently	Never, rarely	Never, rarely	No effort
P39	Average	Average	Infrequently	Infrequently	Infrequently	Effort
P40	Average	Average	Infrequently	Infrequently	Infrequently	Effort
P41	Average	Above average	Infrequently	Infrequently	Never, rarely	Big effort
P42	Average	Above average	Infrequently	Occasionally	Never, rarely	Effort
P43	Average	Minimal to none	Infrequently	Infrequently	Never, rarely	Effort
P44	Average	Above average	Often	Occasionally	Often	No effort
P45	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Never, rarely	Effort
P46	Average	Average	Infrequently	Never, rarely	Infrequently	Effort
P47	Average	Average	Never, rarely	Occasionally	Never, rarely	Effort
P48	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Often	Effort
P49	Average	Average	Infrequently	Often	Never, rarely	No effort
P50	Average	Average	Infrequently	Never, rarely	Never, rarely	No effort
P51	Above average	Above average	Often	Very often	Very often	No effort
P52	Average	Average	Infrequently	Infrequently	Infrequently	Big effort
P53	Average	Average	Infrequently	Never, rarely	Never, rarely	Effort
P54	Average	Above average	Occasionally	Occasionally	Often	No effort
P55	Above average	Above average	Occasionally	Occasionally	Occasionally	Effort
P56	Not much	Not much	Infrequently	Infrequently	Never, rarely	Effort
P57	Not much	Average	Infrequently	Never, rarely	Never, rarely	Big effort
P58	Average	Not much	Infrequently	Occasionally	Occasionally	Effort
P59	Average	A lot	Infrequently	Often	Occasionally	Effort
P60	Not much	Average	Infrequently	Occasionally	Infrequently	Effort
P61	Average	Average	Occasionally	Occasionally	Never, rarely	Big effort
P62	Not much	Average	Infrequently	Infrequently	Occasionally	Effort

Participant Code	Household Finishing Products Purchases in Previous Home	Clothing Purchases in Previous Home	Appliance Purchases in Previous Home	Electronic Purchases in Previous Home	Book Purchases in Previous Home	Second-hand Goods in Previous Home
P63	Average	Average	Never, rarely	Infrequently	Occasionally	Effort
P64	Average	Average	Never, rarely	Infrequently	Infrequently	Effort
P65	Above average	A lot	Infrequently	Infrequently	Occasionally	Effort
P66	Not much	Not much	Infrequently	Often	Occasionally	No effort
P67	A lot	Average	Never, rarely	Often	Infrequently	Effort
P68	Average	Above average	Infrequently	Occasionally	Infrequently	Effort
P69	Not much	Average	Occasionally	Infrequently	Occasionally	Effort
P70	Not much	Not much	Infrequently	Never, rarely	Never, rarely	Effort
P71	Average	Not much	Never, rarely	Infrequently	Occasionally	Effort
P72	Average	Average	Infrequently	Infrequently	Often	Big effort
P73	Average	Not much	Occasionally	Often	Occasionally	Effort
P74	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Occasionally	Big effort
P75	Average	Average	Infrequently	Often	Often	No effort
P76	Minimal to none	Minimal to none	Never, rarely	Never, rarely	Infrequently	Big effort
P77	Average	Average	Occasionally	Infrequently	Often	No effort
P78	Not much	Not much	Infrequently	Infrequently	Often	Effort
P79	Average	Average	Infrequently	Infrequently	Occasionally	Effort
P80	Average	Not much	Never, rarely	Often	Infrequently	Effort

Ecological Footprint Values Pre and Post Downsizing

Participant Code	Previous Ecological Footprint	Earth Value	Food	Shelter	Transportation	Goods	Services	Current Ecological Footprint	Earth Value	Food	Shelter	Transportation	Goods	Services	Footprint Delta
P01	8.3	4.8	2.5	1.2	1.6	1.6	1.4	4.4	2.6	1.2	0.4	1.4	0.5	0.9	3.9
P02	7.9	4.7	2.7	1.3	1.1	1.6	1.2	3.5	2.1	1.3	0.2	1.2	0.1	0.7	4.4
P03	6.5	3.8	0.5	1.1	3	0.3	1.6	5.4	3.2	0.6	0.2	2.8	0.3	1.5	1.1
P04	7.9	4.6	2.2	1.4	1.5	1.6	1.2	3.6	2.1	0.5	0.1	2.5	0	0.5	4.3

Participant Code	Previous Ecological Footprint	Earth Value	Food	Shelter	Transportation	Goods	Services	Current Ecological Footprint	Earth Value	Food	Shelter	Transportation	Goods	Services	Footprint Delta
P05	11.4	6.7	1.9	0.6	6.2	1.4	1.3	6.2	3.7	0.8	0.6	3.8	0	1	5.2
P06	9.7	5.7	2.9	1	2.5	1.7	1.6	6.4	3.7	3.1	0.2	1.9	0	1.2	3.3
P07	6.7	3.9	3.1	1.3	0.3	0.8	1.2	2.7	1.6	1	0.3	0.6	0.3	0.5	4
P08	6.1	3.6	0.7	1.8	1.7	0.8	1.1	0.9	0.6	0.3	0	0.2	0	0.4	5.2
P09	9	5.3	3.1	0.7	3	0.5	1.7	5.5	3.2	0.9	0.1	3	0.3	1.2	3.5
P10	7.5	4.4	2.1	0.9	1.8	1.5	1.2	2.7	1.6	0.5	0.5	1.1	0	0.6	4.8
P11	11.3	6.6	2	1.4	3.8	1.7	2.4	5	2.9	2	0.6	1.2	0.3	0.9	6.3
P12	4.7	2.8	0.4	0.9	1.5	1	0.9	4	2.4	0.3	0.2	1.9	0.7	0.9	0.7
P13	4.2	2.4	2.4	0.8	0.2	0	0.8	1.1	0.6	0.5	0.1	0.1	0	0.4	3.1
P14	9.2	5.4	3.1	1.1	3.7	0.1	1.2	4.8	2.8	1.1	0	3	0	0.7	4.4
P15	6.5	3.8	1.4	1.3	1	1.6	1.2	4	2.3	0.6	0.6	2.1	0	0.7	2.5
P16	3.6	2.1	0.5	1.2	0.5	0.7	0.7	2.5	1.5	0.6	0.3	1.1	0	0.5	1.1
P17	8.1	4.8	1.2	1.6	2.2	1.9	1.2	2.7	1.6	0.9	0.2	0.7	0.3	0.6	5.4
P18	7.7	4.5	0.6	1.2	3.7	1.3	0.9	4	2.4	0.5	0.1	1.9	0.7	0.8	3.7
P19	5.6	3.3	0.9	1.2	2	0.4	1.1	2.9	1.7	0.6	0	1.5	0.1	0.7	2.7
P20	9.8	5.8	1.1	1	4	1.8	1.9	7.3	4.3	1	0.3	3.8	0.5	1.7	2.5
P21	5.3	3.1	1.3	2	1	0.1	0.9	3.9	2.3	1.2	0.1	1.4	0.5	0.7	1.4
P22	7.1	4.1	1.2	1	1.6	2.1	1.2	5.9	3.5	2	0.2	1.6	0.9	1.2	1.2
P23	11.7	6.8	1.4	0.8	6.8	1.7	1	6.2	3.6	1.9	0.2	2.3	0.9	0.9	5.5
P24	6.4	3.8	0.8	1.2	3.2	0.1	1.1	5.9	3.5	0.6	0.2	3.9	0.1	1.1	0.5
P25	7.9	4.6	2.5	1.2	0.4	2.6	1.2	6.6	3.9	2	0.2	1.9	1.4	1.1	1.3
P26	14.5	8.5	0.3	1.2	10.1	0	2.9	6.3	3.7	0.3	0.1	4.3	0	1.6	8.2
P27	7.6	4.5	1.5	1.5	2.2	1	1.4	2.9	1.7	0.7	0.2	1.2	0.1	0.7	4.7

Participant Code	Previous Ecological Footprint	Earth Value	Food	Shelter	Transportation	Goods	Services	Current Ecological Footprint	Earth Value	Food	Shelter	Transportation	Goods	Services	Footprint Delta
P28	7.6	4.4	1.5	1	3.5	0.6	1	6.3	3.7	1.3	0.6	3.5	0.1	0.8	1.3
P29	3.3	1.9	0.9	0.9	0.6	0.3	0.6	1.6	1	0.7	0.1	0.3	0	0.5	1.7
P30	4.4	2.6	0.5	1.7	1.5	0.1	0.6	1.9	1.1	0.5	0.3	0.6	0.1	0.4	2.5
P31	5.3	3.1	1.3	1.8	1	0.4	0.8	2.4	1.4	0.7	0.1	0.9	0.1	0.6	2.9
P32	5.3	3.1	0.3	1.2	1.8	1.3	0.7	3	1.7	0.3	0.2	1.3	0.5	0.7	2.3
P33	4.9	2.9	0.6	1.3	1	1.6	0.4	1.3	0.8	0.6	0.1	0.2	0	0.4	3.6
P34	6	3.5	1	1.3	1.3	1.6	0.8	4.3	2.5	1.7	0.2	1.4	0.1	0.9	1.7
P35	7.7	4.5	1.8	0.6	3	1.4	0.9	6	3.5	1.2	0.3	2.4	1.2	0.9	1.7
P36	8.6	5	1.8	0.3	5	0.7	0.8	2.4	1.4	0.5	0.1	1.3	0.1	0.4	6.2
P37	8.4	4.9	1.8	2.3	1.7	1.4	1.2	5.9	3.4	0.4	0.4	4	0.2	0.9	2.5
P38	6	3.5	0.4	1.2	3.1	0.7	0.6	5.6	3.3	0.6	0.4	3.1	0.2	1.3	0.4
P39	5	2.9	1.8	0.5	1.5	0.7	0.5	2.7	1.6	0.7	0.1	1	0.3	0.6	2.3
P40	6.1	3.6	2.6	1.1	1.1	0.8	0.5	2.6	1.5	0.9	0.6	0.5	0.2	0.4	3.5
P41	7.7	4.5	0.6	1.7	3.4	1.1	0.9	1.8	1.1	0.4	0.1	0.8	0.1	0.4	5.9
P42	12.8	7.5	1.4	1.6	5.8	1.3	2.7	4.7	2.8	0.5	0.3	2.9	0.1	0.9	8.1
P43	5.3	3.1	1.4	1.2	1.1	0.8	0.8	4.3	2.5	1.2	0.3	1.2	0.9	0.7	1
P44	12.7	7.4	1.5	2	5.2	1.7	2.3	6.9	4	0.9	0.1	3.6	0.5	1.8	5.8
P45	2.8	1.7	0.6	1.3	0.4	0	0.5	1.7	1	0.5	0	0.8	0	0.4	1.1
P46	3	1.8	0.8	0.8	0.1	0.8	0.5	2.8	1.6	0.7	0.3	0.6	0.6	0.6	0.2
P47	16.3	9.6	2.6	1.3	8.5	0.9	3	14.3	8.4	2.5	0.1	8.6	0.2	2.9	2
P48	8.3	4.9	0.7	1.4	4.6	0.6	1	4.7	2.8	0.6	0.6	1.8	1	0.7	3.6
P49	5.6	3.3	0.9	1.1	1.6	1	1	3	1.8	1	0.3	0.7	0.3	0.7	2.6
P50	5.5	3.3	1.9	1.3	0.5	1	0.8	3.2	1.9	1.4	0.1	0.1	0.9	0.7	2.3

Participant Code	Previous Ecological Footprint	Earth Value	Food	Shelter	Transportation	Goods	Services	Current Ecological Footprint	Earth Value	Food	Shelter	Transportation	Goods	Services	Footprint Delta
P51	9.6	5.6	1	1.2	3.4	2.5	1.5	3.3	1.9	1	0.2	0.6	0.9	0.6	6.3
P52	5.4	3.2	1.3	1.3	0.3	1.6	0.9	2.5	1.5	1	0.3	0.4	0.2	0.6	2.9
P53	7.5	4.4	1.3	0.4	3.9	0.9	1	7	4.1	1.4	0.3	3.5	0.8	1	0.5
P54	8.9	5.2	2.4	1	1.7	2.2	1.6	1.4	0.8	0.6	0.1	0.1	0.1	0.5	7.5
P55	4.4	2.6	0.5	1.5	0.3	1.3	0.8	1.4	0.8	0.5	0.1	0.3	0.1	0.4	3
P56	15.3	9	1	0.5	10.6	0.1	3.1	5.8	3.4	1	0.2	3.7	0.1	0.8	9.5
P57	4.7	2.8	0.7	1.6	0.7	1	0.7	1.3	0.7	0.5	0.2	0.1	0.1	0.4	3.4
P58	5.8	3.4	0.9	1	2.6	0.4	0.9	4	2.4	0.6	0.3	2.2	0.1	0.8	1.8
P59	7.6	4.5	1	1.2	2.7	1.4	1.3	3.5	2.1	1	0.1	1.3	0.4	0.7	4.1
P60	9.2	5.4	1.6	1.1	4.1	1.4	1	2.5	1.5	0.5	0	1.5	0.1	0.4	6.7
P61	5.3	3.1	0.7	1.4	1.4	0.9	0.9	2	1.1	0.4	0.3	0.7	0.1	0.5	3.3
P62	4	2.3	1.3	1	0.3	0.7	0.7	2.8	1.6	1.2	0.1	0.8	0.1	0.6	1.2
P63	6.1	3.6	0.9	1	2	0.8	1.4	3.5	2	0.7	0.2	1.7	0.2	0.7	2.6
P64	5.2	3.1	1.1	1	1.5	0.8	0.8	3	1.7	0.8	0	1.5	0.1	0.6	2.2
P65	4.8	2.8	0.6	1.2	0.3	1.9	0.8	1.7	1	0.5	0.1	0.4	0.2	0.5	3.1
P66	12.6	7.4	1.1	0.7	7.3	0.4	3.1	8.3	4.8	1.2	0.3	4.7	0.2	1.9	4.3
P67	6.9	4	2.2	0.6	1.5	1.4	1.2	5.3	3.1	2.2	0.6	0.7	0.8	1	1.6
P68	6.5	3.8	1.4	1.7	1.4	1	1	2.4	1.4	0.7	0.1	0.3	0.7	0.6	4.1
P69	8.4	4.9	0.7	1.2	4.2	0.6	1.7	5.8	3.4	0.5	0	3.7	0.1	1.5	2.6
P70	3.7	2.2	1.2	1.1	0.6	0.1	0.7	2.6	1.5	0.7	0.2	1.1	0.1	0.5	1.1
P71	5.1	3	1.2	1.3	0.6	1.3	0.7	1.5	0.9	0.8	0.2	0	0.1	0.4	3.6
P72	4.7	2.7	0.7	1.3	0.6	1.3	0.8	3.8	2.2	0.7	0.7	1.2	0.5	0.7	0.9
P73	5	2.9	1.1	0.9	0.9	1.1	1	3.4	2	0.8	0.3	0.8	0.7	0.8	1.6

Participant Code	Previous Ecological Footprint	Earth Value	Food	Shelter	Transportation	Goods	Services	Current Ecological Footprint	Earth Value	Food	Shelter	Transportation	Goods	Services	Footprint Delta
P74	3.1	1.8	0.7	0.8	0.9	0.1	0.6	2.8	1.6	0.7	0	1.4	0.1	0.6	0.3
P75	6.2	3.6	1.1	0.8	2.1	1.2	1	2.1	1.3	0.5	0.1	0.7	0.2	0.6	4.1
P76	5.4	3.2	0.4	1.2	3.1	0	0.7	1.7	1	0.4	0.2	0.7	0	0.4	3.7
P77	4.5	2.6	0.7	0.8	1.4	1	0.6	4.1	2.4	0.7	0.4	1.7	0.7	0.6	0.4
P78	5.7	3.3	2.7	0.9	0.8	0.3	1	5	2.9	2.7	0.3	0.8	0.2	1	0.7
P79	4.5	2.7	1.2	0.9	0.9	0.7	0.8	2.1	1.2	0.6	0.3	0.6	0.1	0.5	2.4
P80	4.1	2.4	1.4	1	0.6	0.4	0.7	2.6	1.5	1.3	0.1	0.6	0.1	0.5	1.5

APPENDIX M

Interview Questions Changes

Pre-Pilot Study Questions	Comments from Pilot Study	Post-Pilot Study Questions	Comments by Committee	Final Interview Questions
How have your sustainable habits changed due to downsizing to a tiny home?	Break apart into two questions.	Has moving to a tiny home made you more conscious of your environmental impact and choices?	Reword to include decision-making process.	Has moving to a tiny home influenced the way you make decisions related to your environmental impact?
		If so, can you walk me through that process?	Reword for clarification.	If so, can you walk me through your decision-making process when it comes to environmentally-related behaviors?
What habits were the same before downsizing to a tiny home?	Break apart into two questions.	Please discuss any environmentally-conscious behaviors that did not change after downsizing.	Omit question.	Please describe your environmentally-related behaviors before downsizing to a tiny home.
		Please describe your environmentally-conscious behaviors before and after downsizing to a tiny home.	Break up question into two questions.	Please describe your environmentally-related behaviors after downsizing to a tiny home.
In your online survey, you expressed that your _____<*fill in depending on participant's survey responses: transportation, foods, recycling and/or purchasing*>_____	Change "habits" to "behaviors".	In your online survey, you expressed that your _____<*fill in depending on participant's survey responses: transportation, foods, recycling and/or purchasing*>_____	None.	In your online survey, you expressed that your _____<*fill in depending on participant's survey responses: transportation, foods, recycling*

habits are a result of downsizing to a tiny home. How specifically did these habits change?		behaviors are a result of downsizing to a tiny home. How specifically did these behaviors change?		*and/or purchasing*>_____ behaviors are a result of downsizing to a tiny home. How specifically did these behaviors change?
Are there any unsustainable consequences you have experienced as a result of downsizing to a tiny home?	Change to "can you think of".	Can you think of any unsustainable behaviors you have experienced as a result of downsizing to a tiny home?	Reword for clarification; do not include term "unsustainable".	Can you think of any current behaviors you have that may negatively influence your environmental impact? If so, what are these behaviors?
How do you believe your current environmental impact compares to friends/family that live in more conventional types of housing?	None.	How do you believe your current environmental impact compares to friends/family that live in more conventional types of housing?	Reword for clarification.	Will you please compare your current environmental impact to your friends and family who live in conventional types of housing?
Is there anything you would like to add about your experiences downsizing to a tiny home?	Add "that may be applicable to this research".	Is there anything you would like to add about your experiences downsizing to a tiny home that you may think is applicable to this research?	None.	Is there anything you would like to add about your experiences downsizing to a tiny home that you may think is applicable to this research?

APPENDIX N

WIRB Approval Letter

Global Leader | Proven Expert

September 11, 2018

Annie Pearce, PhD, MS, BS
Virginia Tech
330A Bishop-Favrao Hall
Blacksburg, VA 24061

Dear Dr. Pearce:

SUBJECT: REGULATORY OPINION—IRB EXEMPTION
Protocol Title: The Ecological Footprints of Tiny Home Downsizers: An Exploratory Study
Investigator: Annie Pearce, PhD, MS, BS
IRB No.: 18-551

This letter is in response to your request to Western Institutional Review Board (WIRB) for an exemption determination for the above-referenced research project. WIRB's IRB Affairs Department reviewed the exemption criteria under 45 CFR §46.101(b)(2):

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

We believe that the research fits the above exemption criteria. The data will be collected in a way so that the subjects can be identified, directly or through identifiers linked to the participants. However, any disclosure of the human subjects' responses outside the research will not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation. You have also confirmed that the results of this study will not be submitted to the Food and Drug Administration (FDA) for marketing approval.

This exemption determination can apply to multiple sites, but it does not apply to any institution that has an institutional policy of requiring an entity other than WIRB (such as an internal IRB) to make exemption determinations. WIRB cannot provide an exemption that overrides the jurisdiction of a local IRB or other institutional mechanism for determining exemptions. You are responsible for ensuring that each site to which this exemption applies can and will accept WIRB's exemption decision.

Please note that any future changes to the project may affect its exempt status, and you may want to contact WIRB about the effect these changes may have on the exemption status before implementing them. WIRB does not impose an expiration date on its IRB exemption determinations.

If you have any questions, or if we can be of further assistance, please contact Bridget Brave, or e-mail RegulatoryAffairs@wirb.com.

BDB:dj
B2-Exemption-Pearce (09-11-2018)
cc: Virginia Polytechnic Institute and State University (Virginia Tech)
Maria Saxton, Virginia Tech
WIRB Accounting
WIRB Work Order #1-1111597-1

APPENDIX O

Survey Results Email Example

Hi, Blair!

Thank you so much for taking the online survey about your tiny home and contributing to this research study on how downsizing to a tiny home influences one's ecological footprint.

I wanted to send along your footprint results-- Please see the attached screenshots with the following information (two screenshots are labeled as your current footprint information and the other two are for your previous footprint information):

Your previous ecological footprint was 7.7 gha (4.5 Earths), whereas **your current footprint in your tiny home is 1.8 gha (1.1 Earths)**. A "gha" is a global hectare, which is approximately the size of a soccer field. If your ecological footprint was 5 gha, for example, it would mean that your lifestyle requires approximately 5 soccer fields worth of biologically-productive land to accommodate for your lifestyle.

You can also see your consumption by category in the top right corner. As a reference, the average American footprint is 8.4, so your tiny home footprint is well below that, which is fantastic! The ecological footprint calculator isn't 100% comprehensive, as it doesn't consider every single aspect of your lifestyle, but it helps to give you a snapshot of your environmental impact.

And, here is the "Explore Solutions" link: http://www.footprintcalculator.org/result2 which has a lot of great information, as does the rest of the Global Footprint Network website if you wish to peruse it.

Lastly, I plan to share this study's results in one of the spring issues of the Tiny House Magazine, on various tiny home Facebook pages, and hopefully in a few academic journals. Keep an eye out if you want to hear about how this study progresses! Additionally, the pilot study results were shared in the October issue of the Tiny House Magazine.

Thanks again for your time, I truly appreciate it! & If you know anyone else who lives in a tiny home, feel free to tell them about this study-- the more participants, the better! Here is the link again if you have anyone to share it with:
https://virginiatech.qualtrics.com/jfe/form/SV_8kA3KMa1UFCbMDr

Cheers,
Maria Saxton

Virginia Tech, PhD Student
Environmental Design & Planning

APPENDIX P

Phone Interview Script

“Thank you for your interest in this study on the ecological footprints of tiny home downsizers. This study is being conducted by the Building Construction department at Virginia Tech. This project is led by Maria Saxton, a third-year Ph.D. student studying Environmental Design and Planning. This project is advised by Dr. Annie Pearce, a professor at Virginia Tech and the Graduate Chair of the Building Construction Department.

This study is designed to measure the ecological footprint of individuals that downsize to tiny homes and compare these footprints to that of the average American. Your help will enable us to understand the relationship between downsizing to a tiny home and an individual’s ecological footprint, and how tiny homes can be improved in the future to improve individual’s ecological footprints. The results of this study may be published in academic journals or conference proceedings, but no identifying information will be included that would allow readers to determine your identity.

Your participation in this study is voluntary and will remain confidential. Participation will include a phone interview consisting of seven open-ended questions which should take between 30 and 40 minutes.

With your permission, this interview will be recorded. You are free to not answer any questions if you choose without penalty. You may also discontinue participation in this interview at any time without penalty.

Any identifying information, including contact and location information, will be replaced with an ID code on all data to protect your privacy. The only individuals with access to this data will be Dr. Pearce and Ms. Saxton. It is possible that the Institutional Review Board (IRB) may also view this study’s collected data for auditing purposes. The IRB is responsible for the oversight of the protection of human subjects involved in research.

There is no compensation for participation. You are free to withdraw at any time without penalty.

I would like to make a tape recording of our discussion so that I can have an accurate record of the information that you provide to me. I will transcribe that recording by hand and will keep the transcripts confidential and securely in my possession.

Do you give permission for this interview to be recorded?”

APPENDIX Q

Renumbering of Interview Participants

Interview Participant Original Code	Interview Participant New Code
P29	P1
P32	P2
P33	P3
P34	P4
P35	P5
P36	P6
P37	P7
P41	P8
P42	P9

APPENDIX R

Coding Process Example

1) Extracted raw data from interview transcripts and identified associating behavior.

Behavior	Raw Data Quote
Uses biodegradable personal products	**P2:** I am really cautious of the products that I use, that go down the drain. Just to make sure that they're sustainable, they're all biodegradable, the dish wash soap, my shampoo, all that jazz. So I just make sure that that is biodegradable, and previously I would have gone with what was cheapest with those kind of products.

2) Combined behaviors related to each footprint component. The figure below shows combined behaviors for the 'Goods & Services' component and calls out the behavior from this example.

Purchasing Philosophy	Participant Code	Purchasing Frequency	Participant Code	Types of Purchases	Participant Code	Recycling	Participant Code	Household Products	Participant Code	Plastic Use	Participant Code	Amount of Belongings	Participant Code	Miscellaneous	Participant Code
Purchases items intentionally	3	Purchases less	2	Buys second-hand clothes	7	Recycles less	2	Uses biodegradable personal products	2	Uses reusable grocery bags	2	Has less clothing, kitchen items, furniture	2	Repairs clothes	3
Has increased consciousness of possessions	3	Initially purchased items to fit into tiny home	5	Spends money on housing upgrades, not physical objects	7	Recycles more	4	Makes own household products	2	Reduces use of single-use plastic	2	Got rid of unused items after downsizing	3	Organizes bulk items	3
Has conscious decisions to minimize waste	3	Purchases more online (more packaging waste)	5	Buys second-hand clothes	7	Recycles less	5	Uses biodegradable products	3	Uses reusable corelle bowls	3	Downsized wardrobe	3	Use more public spaces	4
Purposefully purchases items	5	Purchases less	9	Does not buy bulk items	7	Recycles all items	7	Uses non-toxic products	3	Uses reusable grocery bags	4	Got rid of stuff before downsizing	3	Makes own clothes	8
Uses one in one out purchasing approach	7	Avoids purchasing items	1	Buys audio books	7	Recycles all items	7	Uses reusable household products (plasticware, wraps, storage bags)	5	Uses reusable water bottles	4	Stores storage items at husband's studio	7		
Replaces multiple items with ones higher quality item	7	Purchases very little	8	Buys items in smaller quantities with more packaging	7	Does not wash recyclables thoroughly	7	Uses wool balls	5	Uses reusable water bottles	7	Got rid of most possessions	7		
Uses one in one out purchasing approach	9			Purchases low tech items	1	Recycles, reuses, and repurposes items	9	Makes own household products	5	Purchases non-plastic alternatives	1	Got rid of clothing items	9		
Lives a zero waste lifestyle	1			Purchases items that are packaged responsibly	1	Washes out recyclables thoroughly	9	Uses all natural cleaners	5	Uses reusable items	1				
Lives a zero waste lifestyle	8			Only purchases items from sustainable manufacturing companies	8	Recycles as much as possible	1	Uses oils instead of perfumes	5	Keep reusable eatery items in car to replace disposable options	1				
Uses a process for consumption when purchasing items	8							Uses oils instead of medicines	5	Avoids plastic items	8				
Uses natural resources more often	6							Reuses house items, like face towels	7	Uses reusable eatery items	6				
Lives a minimal waste lifestyle	6							Reuses house items, like zip lock bags	7						
								Uses reusable household products instead of disposable ones	1						
								Reuses household items	6						
								Reutilizes household goods	6						

Household Products	Participant Code
Uses biodegradable personal products	2
Makes own household products	2

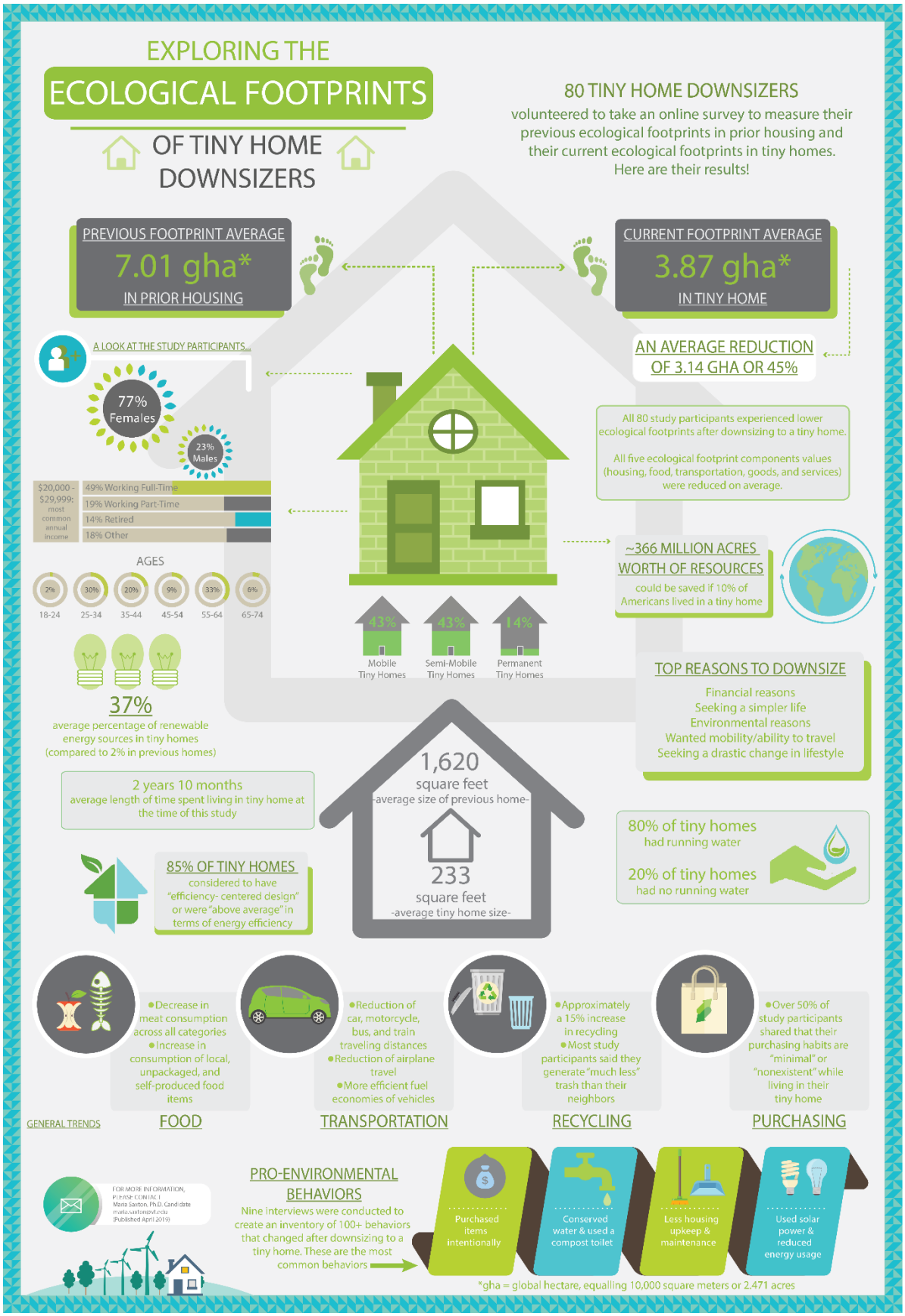
3) Incorporated behaviors into behavior inventory. The figure below shows the behavior from this example incorporated into the behavior inventory. The column on the right shows how many study participants mentioned this specific behavior.

Goods & Services	Types of Purchases	Buys second-hand clothes	2
		Spends money on housing upgrades, not physical objects	1
		Does not buy bulk items	1
		Buys audio books	1
		Buys items in smaller quantities with more packaging	1
		Purchases low tech items	1
		Purchases items that are packaged responsibly	1
		Only purchases items from sustainable manufacturing companies	1
	Recycling	Recycles all items	3
		Recycles less	2
		Recycles more	1
		Recycles, reuses, and repurposes items	1
		Washes out recyclables thoroughly	1
		Does not wash recyclables thoroughly	1
	Household Products	Makes own household products	2
		Uses biodegradable products	2
		Uses non-toxic products	2
		Uses reusable household products (plasticware, wraps, storage bags)	2
		Reuses house items, like zip lock bags	2
		Reutilizes household goods	1
		Reuses personal items, like face towels	1
		Uses oils instead of perfumes	1
		Uses oils instead of medicines	1
		Uses wool balls	1

Makes own household products	2
Uses biodegradable products	2
Uses non-toxic products	2

APPENDIX S

Researcher's Infographic of Key Study Findings


EXPLORING THE
ECOLOGICAL FOOTPRINTS
OF TINY HOME DOWNSIZERS
80 TINY HOME DOWNSIZERS
volunteered to take an online survey to measure their previous ecological footprints in prior housing and their current ecological footprints in tiny homes. Here are their results!
PREVIOUS FOOTPRINT AVERAGE
7.01 gha*
IN PRIOR HOUSING
CURRENT FOOTPRINT AVERAGE
3.87 gha*
IN TINY HOME
AN AVERAGE REDUCTION OF 3.14 GHA OR 45%
All 80 study participants experienced lower ecological footprints after downsizing to a tiny home.
All five ecological footprint components values (housing, food, transportation, goods, and services) were reduced on average.
A LOOK AT THE STUDY PARTICIPANTS...
77% Females
23% Males
$20,000 - $29,999: most common annual income
49% Working Full-Time
19% Working Part-Time
14% Retired
18% Other
AGES
2% 18-24
30% 25-34
20% 35-44
9% 45-54
33% 55-64
6% 65-74
43% Mobile Tiny Homes
43% Semi-Mobile Tiny Homes
14% Permanent Tiny Homes
~366 MILLION ACRES WORTH OF RESOURCES
could be saved if 10% of Americans lived in a tiny home
TOP REASONS TO DOWNSIZE
Financial reasons
Seeking a simpler life
Environmental reasons
Wanted mobility/ability to travel
Seeking a drastic change in lifestyle
37%
average percentage of renewable energy sources in tiny homes (compared to 2% in previous homes)
1,620
square feet
-average size of previous home-
233
square feet
-average tiny home size-
2 years 10 months
average length of time spent living in tiny home at the time of this study
80% of tiny homes had running water
20% of tiny homes had no running water
85% OF TINY HOMES
considered to have "efficiency- centered design" or were "above average" in terms of energy efficiency
GENERAL TRENDS
FOOD
•Decrease in meat consumption across all categories
•Increase in consumption of local, unpackaged, and self-produced food items
TRANSPORTATION
•Reduction of car, motorcycle, bus, and train traveling distances
•Reduction of airplane travel
•More efficient fuel economies of vehicles
RECYCLING
•Approximately a 15% increase in recycling
•Most study participants said they generate "much less" trash than their neighbors
PURCHASING
•Over 50% of study participants shared that their purchasing habits are "minimal" or "nonexistent" while living in their tiny home
FOR MORE INFORMATION, PLEASE CONTACT:
Maria Santos, Ph.D. Candidate
maria.santos@uvt.edu
(Published April 2019)
PRO-ENVIRONMENTAL BEHAVIORS
Nine interviews were conducted to create an inventory of 100+ behaviors that changed after downsizing to a tiny home. These are the most common behaviors
Purchased items intentionally
Conserved water & used a compost toilet
Less housing upkeep & maintenance
Used solar power & reduced energy usage
*gha = global hectare, equalling 10,000 square meters or 2.471 acres

APPENDIX T

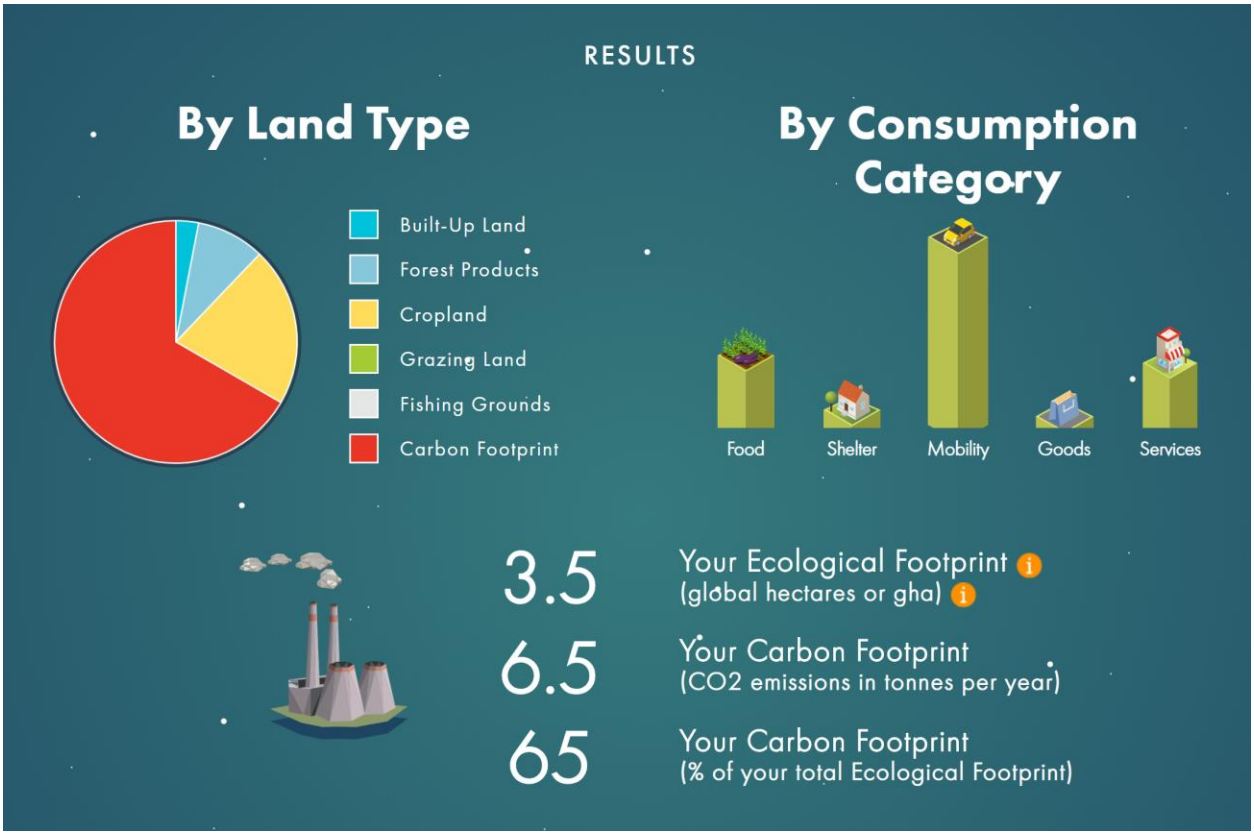
Represented States from Survey Data (While Living in Current Tiny Home)

Represented States from Survey Data (While Living in Current Tiny Home)

State	# of Participants
TX	9
CA	8
OR	8
WA	8
CO	6
NC	6
VA	4
MN	3
FL	2
IN	2
MA	2
NY	2
OK	2
TN	2
AL	1
GA	1
IA	1
KS	1
ME	1
MI	1
MT	1
NJ	1
NM	1
NV	1
OH	1
SC	1
UT	1
WI	1
WV	1
WY	1

APPENDIX U

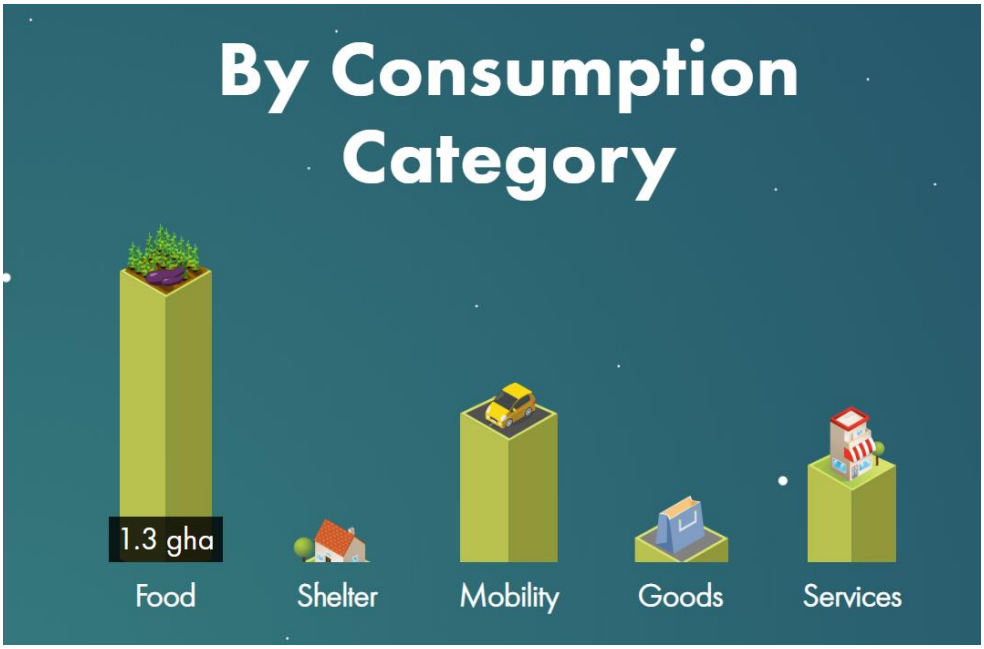
Example Global Footprint Network Ecological Footprint Result


RESULTS
By Land Type
Built-Up Land
Forest Products
Cropland
Grazing Land
Fishing Grounds
Carbon Footprint
By Consumption Category
Food
Shelter
Mobility
Goods
Services
3.5
Your Ecological Footprint
(global hectares or gha)
6.5
Your Carbon Footprint
(CO2 emissions in tonnes per year)
65
Your Carbon Footprint
(% of your total Ecological Footprint)

RESULTS
Your personal Earth Overshoot Day is:
30 Jun
If everyone lived like you, we would need
2 Earths

APPENDIX V

Ecological Footprint Component Value Example


By Consumption Category
1.3 gha
Food
Shelter
Mobility
Goods
Services

APPENDIX W

Ecological Footprint Values of 80 Study Participants

Participant Code	Previous Ecological Footprint	Earth Value	Current Ecological Footprint	Earth Value	Ecological Footprint Δ
P01	8.3	4.8	4.4	2.6	3.9
P02	7.9	4.7	3.5	2.1	4.4
P03	6.5	3.8	5.4	3.2	1.1
P04	7.9	4.6	3.6	2.1	4.3
P05	11.4	6.7	6.2	3.7	5.2
P06	9.7	5.7	6.4	3.7	3.3
P07	6.7	3.9	2.7	1.6	4
P08	6.1	3.6	0.9	0.6	5.2
P09	9	5.3	5.5	3.2	3.5
P10	7.5	4.4	2.7	1.6	4.8
P11	11.3	6.6	5	2.9	6.3
P12	4.7	2.8	4	2.4	0.7
P13	4.2	2.4	1.1	0.6	3.1
P14	9.2	5.4	4.8	2.8	4.4
P15	6.5	3.8	4	2.3	2.5
P16	3.6	2.1	2.5	1.5	1.1
P17	8.1	4.8	2.7	1.6	5.4
P18	7.7	4.5	4	2.4	3.7
P19	5.6	3.3	2.9	1.7	2.7
P20	9.8	5.8	7.3	4.3	2.5
P21	5.3	3.1	3.9	2.3	1.4
P22	7.1	4.1	5.9	3.5	1.2
P23	11.7	6.8	6.2	3.6	5.5
P24	6.4	3.8	5.9	3.5	0.5
P25	7.9	4.6	6.6	3.9	1.3
P26	14.5	8.5	6.3	3.7	8.2

P27	7.6	4.5	2.9	1.7	4.7
P28	7.6	4.4	6.3	3.7	1.3
P29	3.3	1.9	1.6	1	1.7
P30	4.4	2.6	1.9	1.1	2.5
P31	5.3	3.1	2.4	1.4	2.9
P32	5.3	3.1	3	1.7	2.3
P33	4.9	2.9	1.3	0.8	3.6
P34	6	3.5	4.3	2.5	1.7
P35	7.7	4.5	6	3.5	1.7
P36	8.6	5	2.4	1.4	6.2
P37	8.4	4.9	5.9	3.4	2.5
P38	6	3.5	5.6	3.3	0.4
P39	5	2.9	2.7	1.6	2.3
P40	6.1	3.6	2.6	1.5	3.5
P41	7.7	4.5	1.8	1.1	5.9
P42	12.8	7.5	4.7	2.8	8.1
P43	5.3	3.1	4.3	2.5	1
P44	12.7	7.4	6.9	4	5.8
P45	2.8	1.7	1.7	1	1.1
P46	3	1.8	2.8	1.6	0.2
P47	16.3	9.6	14.3	8.4	2
P48	8.3	4.9	4.7	2.8	3.6
P49	5.6	3.3	3	1.8	2.6
P50	5.5	3.3	3.2	1.9	2.3
P51	9.6	5.6	3.3	1.9	6.3
P52	5.4	3.2	2.5	1.5	2.9
P53	7.5	4.4	7	4.1	0.5
P54	8.9	5.2	1.4	0.8	7.5
P55	4.4	2.6	1.4	0.8	3

P56	15.3	9	5.8	3.4	9.5
P57	4.7	2.8	1.3	0.7	3.4
P58	5.8	3.4	4	2.4	1.8
P59	7.6	4.5	3.5	2.1	4.1
P60	9.2	5.4	2.5	1.5	6.7
P61	5.3	3.1	2	1.1	3.3
P62	4	2.3	2.8	1.6	1.2
P63	6.1	3.6	3.5	2	2.6
P64	5.2	3.1	3	1.7	2.2
P65	4.8	2.8	1.7	1	3.1
P66	12.6	7.4	8.3	4.8	4.3
P67	6.9	4	5.3	3.1	1.6
P68	6.5	3.8	2.4	1.4	4.1
P69	8.4	4.9	5.8	3.4	2.6
P70	3.7	2.2	2.6	1.5	1.1
P71	5.1	3	1.5	0.9	3.6
P72	4.7	2.7	3.8	2.2	0.9
P73	5	2.9	3.4	2	1.6
P74	3.1	1.8	2.8	1.6	0.3
P75	6.2	3.6	2.1	1.3	4.1
P76	5.4	3.2	1.7	1	3.7
P77	4.5	2.6	4.1	2.4	0.4
P78	5.7	3.3	5	2.9	0.7
P79	4.5	2.7	2.1	1.2	2.4
P80	4.1	2.4	2.6	1.5	1.5