

AN ABSTRACT OF THE THESIS OF

Odhran Mason McGonagall for the degree of Master of Arts in Applied Anthropology
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Title: Exploring Income, Housing Space, and Cultural Perceptions in Relationship to
Food Security in Full-time RV Households

Abstract approved: _____

This thesis explores the relationships that income and housing space limitations have with regard to food security in full-time recreational vehicle (RV) households. This research used a scaled survey tool and a subset questionnaire to gather information on RV dwellers' housing and kitchen spaces along with participants' food shopping, storage, preparation, and consumption patterns. Data was gathered from more than 200 RV households representing two distinct RV dwelling populations—full-time mobile and stationary RVers. Results show that mobile and stationary RV dwelling populations have similar RV space measurements, but disparate income levels, food strategies, perceptions of space, assessed comfort levels, and levels of household food security. The results show that the nature of RV living can be shaped by incomes, space, and cultural perceptions. Even when RV dwellers are compliant with cultural perceptions and use the RV for travel purposes, long-term RV living can exacerbate income and food security limitations for both mobile and stationary RVers.

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Exploring Income, Housing Space, and Cultural Perceptions in Relationship to Food
Security in Full-time RV Households

by
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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Odhran Mason McGonagall, Author

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CONTRIBUTION OF AUTHORS

Dr. Lisa L. Price assisted with interpretation of data and the design and writing of Chapters 2 and 3. Dr. Seunghae Lee and Dr. Elif Tural assisted in the interpretation and organization of data for Chapter 3.

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Foreword: The Significance and Obstacles of Doing Research with RV Dwellers

*“What can be any man’s inducement to tarry in one spot? Why should he build a more cumbrous habitation than can readily be carried off with him? Why should he make himself a prisoner for life in brick, and stone, and old worm-eaten timber, when he may just as easily dwell, in one sense, nowhere,—in a better sense, wherever the fit and beautiful shall offer him a home?”—Nathaniel Hawthorne, *The House of the Seven Gables**

Living from recreational vehicles (RVs) and tents, a population of winter laborers built a city-like network that sprawled across the center of Alfred Loeb State Park in Oregon. Blue tarps connected multiple campsites together, and everyone seemed related or to be at least friends with one another. Workers interacted with their mushrooming community, cleaned fish, cooked, and shared large quantities of bulk non-perishables, which they stored under their sagging blue shelters, rain dripping steadily from the worn seams of these makeshift homes. RVs were the hubs of their community, and from our own aging and leaking RV, we felt in some small way like adopted members of this working village.

My partner and I fell somewhere between the two distinct groups of full-time RV dwellers we had encountered. We were mobile, but with our 30-year-old RV, we had been jokingly referred to as the “trailer trash” of State Park volunteers. Lack of funds made us more like the stationary RVers we found at Loeb, rather than the mobile RVers traveling and volunteering at most of the State Parks. Our living in an RV was due to a

circumstantial need to afford the cost of living while I completed my undergraduate education. As our first year of RV living passed, whenever something broke, we had trouble affording the repair. These unforeseen costs increasingly impacted our overall enjoyment of RV living while sapping money from other budgeted expenses – typically food and travel. Space limitations also shaped nearly everything we did in our small home. To say we had insufficient counter space to cook would be a terrific understatement. I juggled dishes, broke many, and often looked for ways to avoid cooking altogether, which frequently meant eating with co-hosts and camping neighbors in the great outdoors.

Trying to buy enough food on our limited budget was also difficult. We skipped meals and were unable to buy in bulk because there was no room in the RV to store even average-sized quantities of anything. Our tiny refrigerator-freezer barely kept anything frozen, meaning both the size and functional inadequacy of it forced us to buy meat in smaller packaging. We saved no money there. This along with limited storage forced us to make more trips to the store, costing us more in fuel. The truck, being the largest enclosed space we had, helped to resolve some of our storage space shortages by serving as our pantry cupboard for many months. We found during colder months that we could keep things cooler in the truck than we could in the refrigerator. It was at Loeb State Park that I began to imagine that the stationary RV dweller was one I could feasibly research as I continued on as an Anthropology Master's student at Oregon State University.

When I was accepted to the M.A. program in applied Anthropology at Oregon State, I read a number of papers on food security concerns in low-income populations. Poring through academic journals, I found that a food study based on housing space

limitations had yet to be done. The RV household was a perfect scenario for such a study. Following my first year of graduate school, in the summer of 2013, my partner and I returned in our RV to the Oregon State Parks on the Columbia River Gorge. There, I began my research.

General Thesis Outline

This manuscript serves as a fulfillment of the thesis requirements of a Master of Arts in Applied Anthropology at Oregon State University. Following the introduction are the results of research I conducted in Oregon in June through September 2013 and two journal article manuscripts. This approach allows for a clear presentation of research results for a wide audience and allows professional development in academic research and research presentation.

The introduction will provide readers with context for the research and article manuscripts. Chapter 2 provides a description of the stationary RV study population by household demographics and comparative space limitations to U.S. standards in relation to food security. Research methods and data analysis techniques are included in Chapter 2. Chapter 3 utilizes observations and findings from Chapter 2 in order to compare mobile and stationary RV dwellers and their perceptions of their RV kitchen spaces in relationship to food strategies and food security.

The first manuscript focuses on stationary RV households and their income levels and housing space as related to food utilization, food strategies, and food security. This manuscript was prepared for publication and was co-authored with Dr. Lisa L. Price, Professor of Anthropology at Oregon State University.

The second manuscript takes an interdisciplinary approach from the fields of Anthropology and Design and Human Environment. This manuscript focuses on a comparison of full-time stationary and mobile RV dwellers' small kitchen and housing space properties, food strategies, and food security levels. Income levels and ownership of other primary homes is weighed with measured housing spaces and assessments of kitchen spaces to effectively compare how different social recognitions of RV populations impact perceptions of kitchen adequacy, household food strategies, and food security. Understanding how food spaces are utilized within small-space RV households in relationship to income levels and food security will strengthen the definition of food utilization where storage, cooking, consumption, and clean-up are considered. This analysis will further add to the field of Anthropology where studies are developed to examine household relationships to food insecurity. In the field of Design and Human Environment, this study also provides a basis for minimal requirements in sustainable small-housing and kitchen design. This second manuscript was co-authored with Dr. Lisa L. Price, Professor of Anthropology at Oregon State University, and Dr. Seunghae Lee, Professor of Design and Human Environment at Oregon State University.

The concluding chapter provides observations on the comparative relationships between housing and kitchen space, income, and food security. This is paired with social perspectives on RV living and low-income housing and ongoing lack of recognition by the census and city estimates for RV dwellers as "housed" persons. In addition, the conclusion provides suggestions for further studies on limited-space and limited-income housing in the U.S. from an Anthropological and Design and Human Environment

perspective when considering household food security, aging, affordability, and sustainability.

Exploring Income, Housing Space, and Cultural Perceptions in Relationship to Food Security in Full-time RV Households

Chapter 1: Introduction

The Purpose of this Study

The primary purpose of this study is to determine whether housing and kitchen space limitations in both mobile and stationary recreational vehicle (RV) households are tied to certain household food strategies in relationship to household food security. In order to make these determinations, this study examines income levels along with space measurements and RV dwellers' assessments of kitchen spaces related to food utilization. This study focuses on space-related aspects of food utilization that relate to food shopping, storage, preparation, clean-up, and consumption within full-time RV households. The following is intended to provide the audience with a background on RV living and culture in the U.S. along with common and current socio-cultural and economic situations that impact full-time RV dwellers.

Background on RV Culture and RV Households

“RVs are not designed to be used as permanent dwellings, but as temporary accommodations for recreational, camping, travel or seasonal use” (RVDA, 2011). Both culturally and officially, recreational vehicles (RVs) are not recognized as adequate primary housing in the U.S. (APHA, 1986; HUD, 2013; RVDA, 2011). And yet, RVs, though manufactured for vacation and travel, serve as primary homes for many months at a time for at least a quarter of a million people in the United States (U.S. Census Bureau,

2000). When used as homes, RVs can be considered much more space-limited than standard U.S. homes. As such, they may present obstacles to housing adequacy when lived in for extended periods. A number of other living necessities and lifestyle comforts, such as food storage, food preparation and clean-up, and housing comfort, may also be shaped by long-term RV living. In addition, cultural acceptance of RV inhabitants and their aging RVs may be limited based on common social marginalization of low-income housing in the U.S. (Jackson, Langille, Lyons, Hughes, Martin, & Winstanley, 2009; Kusenbach, 2009; MacTavish & Salamon, 2001).

Travel trailers began being used as homes in the United States dating back to before World War II (Hart, Rhodes, & Morgan, 2002; Miller & Evko, 1985). Soon after their inception, trailers became popular permanent homes for low-income retirees, migrant workers, and returning veteran soldiers (Miller & Evko, 1985). Today, recreational vehicles are much more than the makeshift accommodations on wheels they were nearly a century ago. In addition to the traditional travel trailer, RVs include motor homes, fifth wheels, vans, campers, and even boats. Since the RV's inception, this comfortable travel vehicle has been modernized with current technology-based features, such as working toilets and other necessary plumbing, working electricity, water heaters, stoves, refrigeration, televisions, beds, and a number of other features, including gas fireplaces, all of which can be found in standard homes. Despite newer amenities, RVs, when used continuously for months and years at a time, can be limited on space, especially in the kitchen (Figure 1).



Figure 1. Space Utilization in the RV. The standard RV kitchen is often limited by small refrigerators, sinks, ovens, cupboards or pantries, and small counters for food preparation.

Despite so many similarities to standard housing, consumer marketing and coding of the RV as a vehicle lends to a common misconception that RVs are used only as advertised – for middle-class vacation and travel purposes. Yet, for many years, the RV has continued to be an optimal choice not only for short-term vacations, but for long-term or full-time travel as well as lower-income living (Ayers Counts & Counts, 2001; Miller & Evko, 1985; Williams, 1995). While a singular mobile RVing audience is the focus for RV marketing, two distinct groups actually make up the majority of full-time RV dwellers. The first group, which will be referred to as “mobile RV dwellers” for the purpose of this study, can be described as predominantly retired middle-class travelers (Ayers Counts & Counts, 2001; Williams, 1995). The second group, not previously or

currently defined as members of the culturally accepted full-time RVing populace, can be referred to as “stationary RV dwellers.”

Mobile RV Dwellers

In a multi-year study that included participant observation in 1990, 1993-1994, and in 1998, anthropologists Ayers Counts and Counts (2001) wrote about experiences of mobile RV populations from Canada. Their target RV population was Escapees, or Canadian middle-class retiree RV dwellers who defined themselves as full-time RVers. Ayers Counts and Counts stated the “narrow definition [of a full-time RVer] is someone who has all their possessions in a recreational vehicle. They have no home base, not even a storage shed” (Ayers Counts & Counts, 2001, p. 48). Ayers Counts and Counts related that giving up a home base is not the actual practice of many full-time mobile RVers. Yet, understanding that there is a large community of RVers who live for several months in the RV as the home, whether mobile or stationary, Ayers Counts and Counts defined full-time RVers as “those who consider themselves to be *living* in the recreational vehicles...” (Ayers Counts & Counts, 2001, p. 48). For this study, we further defined “RV living” as a period of at least six consecutive months in which the RV was utilized as a primary home.

The marketed target audience for RVs is typically the weekend to two-week vacationer. However, full-time mobile RV dwellers fit well within this audience, utilizing the RV for leisure activity and travel. In relationship to the manner in which RVs are marketed, members of mobile RV households often use a culturally inclusive and recognizable RV lexicon to refer to themselves as “full-timers,” “snowbirds,” “caravaners,” “boondockers,” or “escapees.” The focus of this groups’ purpose for RV

living is participation in a recognized subcultural group, related RVing activities, and travel away from the primary home. This population is highly mobile, often traveling hundreds (and even thousands) of miles with their RVs each year. These “boondockers” or “snowbirds” are usually able to maintain their RVs to keep them traveling and functional. Ayers Counts and Counts (2001) discuss this mobile RV population as primarily between the ages of 56-65, a group they define as early retirees or “the young-old.” Nearly half of all full-time RVers are from this age group according to their 2001 publication of a study with nearly 450 RV participants.

Stationary RV Dwellers

Stationary RV dwellers are a semi-hidden population in America who are neither homeless nor living in standard U.S. homes. This second group of RV dwellers is not targeted by RV marketing strategies, but is still a group of “full-time RVers.” Stationary RV dwellers are often socially and culturally recognized as lower-income households living in RVs as their primary homes with no other home or real property ownership (Ayers Counts & Counts, 2001; Williams, 1995). Rather than living for a few months of the year in their RVs, and returning to other primary homes, stationary RVers commonly live in RVs year-round, and for several years at a time (Ayers Counts & Counts, 2001; Williams, 1995). Stationary RV dwellers were not measured in the most recent 2010 U.S. Census, and in the 2000 census, full-time RV dwellers were counted by measuring “transient” persons living in “non-standard housing” defined specifically as “the mobile recreational vehicle as a primary home” (U.S. Census Bureau, 2000). Estimates on RV dwellers living in the U.S. are not known in current times despite a number of reports from the social media in recent years indicating that these RVers exist in large numbers

throughout the U.S. following the 2008 housing crisis (BBC News, 2013; LA Times, 2013; NY Times, 2010; Rolling Stone 2012; SF Gate and Chronicle, 2013).

To help bring recognition to and define this population, stationary RV dwellers are more comparatively like standard home dwellers than like mobile RV dwellers. Stationary RV homes, once parked, are like site-built homes or even mobile homes in that they remain permanent fixtures for extended periods despite being classified as “mobile vehicles” (Figure 2). While both RV dwelling groups can be found in various locations, based on previous studies by Ayers Counts and Counts (2001) and Williams (1995), mobile RV dwellers are more likely to be found in short-term-stay campgrounds and resorts, whereas stationary RV dwellers are more likely to stay in trailer parks or other locations with long-term-stay possibilities.



Figure 2. The Stationary RV. With fence, deck, and cover, these RVs are more permanently affixed to the land as primary homes.

Like their mobile RV dwelling counterpart, stationary RVers deal with significantly reduced housing spaces in comparison to standard U.S. homes (APHA, 1986; RVIA, 2015; U.S. Census Bureau 2010). Understanding how limited spaces might share some influence on RV household lifestyles depends to some degree on the understanding of the concepts “adequate housing space” and “adequate kitchen space.” When compared to those who live in houses, the smaller interior of the RV changes the perspective of “home” for RVers, according to Ayers Counts and Counts (2001).

“Many who live in houses see their homes as inside, as a place where they are enclosed: a separate space from the world outside. Moving from even a small house or apartment into an RV requires a considerable adjustment. Because interior space is so limited, RVers spend much time living outdoors” (Ayers Counts & Counts, 2001, p. 186).

Ayers Counts and Counts (2001) explain that adjustments can be made to accommodate for the space limitations in the RV. Yet, when RV living is a preferred option for retirement sociability and leisure travel, these adjustments may be an expected and accepted adaptation that corresponds with the mobile RV lifestyle choice. For stationary RVers, where RV living may be due to more circumstantial low-income living, and subject to greater financial constraints, space limitations may further exacerbate other existing household concerns, such as comfort and food security.

Food Security in the RV Household

RV household conditions in relation to food security can be better understood in the context of current research which recognizes that low-income living situations and neighborhoods often shape household food choices and food patterns. Present research focuses on assessing levels of food security based on the four key pillars of food

security: food supply/availability, food access, food utilization, and food stability (Frankenberger 1996; Maxwell & Smith, 1992; WFP, 2014). Though food utilization studies often address food's nutritional impact, this is the pillar that most closely approaches the concept of how certain household food patterns must be in place in order to ensure food security.

Food utilization includes “cooking, storage, and hygiene practices” as well as “feeding and sharing practices” (Frankenberger, 1996; Maxwell & Smith, 1992; WFP, 2014). When these practices are insufficient for food security in the household, they might be defined as “limitations” or even predictors to food insecurity. In consideration of factors that might influence the presence or absence of food procurement, storage, preparation, consumption, and clean-up, it is logical to consider financial wherewithal as well as housing and kitchen spaces. Space is reasonably needed to perform a number of these attributes of sufficient food utilization, such as storage, cooking, dish-washing/hygiene/sanitation, as well as food consumption or feeding/meal sharing. Lack of such housing spaces may work to exacerbate food insecurity in households already suffering from financial limitations.

Theory: Home and Cultural Capital

Shin's (2014) Theoretical Model of Home explains that the concept of home is dependent not only on the geographical elasticity of the home with relationship to one's earthly location, neighborhood, and housing type, but on the individual's nested position within a social setting. Drawing from Canter's theory (1991), Shin provides a transactional theoretical model of home, pairing the “rules of place” and “cognitive

ecology.” This allows for an understanding of the home as an environment that follows socially expected behaviors within the setting (Shin, 2014, pp. 80-84).

Adapting Shin’s (2014) theoretical model so it can be applied to the RV home, RVs can be understood as more of an environment that influences behavior and perceptions than simply a place of shelter. The RV home, when viewed in accordance with Shin’s theory, can be partly defined as a “general human condition” or “ideology,” pertaining to individual and group social and cultural expectations of the home, the home’s representative space, the individual, and the actions of the individual within that space (Shin, 2014, pp. 80-84). This theory enables us to understand how the RV has come to be viewed as an instrument for socially acceptable leisure activity among mobile RVers while it is simultaneously stigmatized as a substandard housing option for stationary RV dwellers.

Bourdieu’s (1984) theory on cultural capital helps to explain this further. Just as the APHA (American Public Housing Association) exists to define minimal living standards, there are cultural conditions that deem what is adequate and inadequate in terms of human living necessities. In consideration of RVing and housing, the group that sets living standards is the group to which these rules generally pertain (Bourdieu, 1984). Bourdieu’s (1984) explanation of cultural capital applies here where rules for the dominant social class can be applied to housing standards as well as to RV usage expectations in the U.S. Existing research paints a clear picture of mobile RVers engaging in RV cultural standards that result in positive returns of cultural capital, especially among other middle-class RVers (Ayers Counts & Counts, 2001; Williams, 1995). Following Shin’s (2014) and Bourdieu’s (1984) theories, since cultural capital can be

gained by mobile RVers who comply with RV lifestyle standards shared by others of the same class, the RV would not likely be viewed as a limited home in space or otherwise, but as a source of enjoyment, travel, and social activity that helps to improve upon other confinements of aging.

Part of the reason stationary RVers are nearly invisible and unexplored in academic studies in the U.S. is that their RV living does not comply with the ideologies of well-established RVing standards set by mobile RVers. Those living in marginalized stationary RV communities are not really recognized as RVers when cultural middle-class standards for RV living are applied to them. Following Bordieu's (1984) theory, stationary RVers with financial constraints will not only recognize cultural standards they are unable to comply with, but will also readily acknowledge that they lack certain features of "proper" living deemed adequate by others. Again this can be paired with Shin's (2014) Theory of Home. Because the stationary RV fits neither housing nor RV cultural standards, for stationary RVers, the RV likely becomes a symbol of social marginalization as a lower-class home and impoverished lifestyle. As a primary home, stationary RV occupants are therefore more likely to compare their living arrangements to U.S. housing standards than to enjoyable retirement travel options. In this case, stationary RVers would be more likely than mobile RVers to view their RV spaces as limiting and confining in certain ways.

Applying the theories of Shin (2014) and Bourdieu (1984) enables us to understand how the RV has come to be viewed as an instrument for socially acceptable leisure activity among mobile RVers while it is simultaneously marginalized as a substandard, less-than-preferential housing option for stationary RV dwellers. These

theories further allow us to compare and explain intergroup disparities and agreements in relationship to housing and kitchen space perceptions and food patterns demonstrated in both full-time stationary and mobile RV households. Even where interior spaces and kitchens are markedly similar among both mobile and stationary RV dwellers, by applying this theory, we are better able to evaluate how income and space contribute to household environmental behaviors and perceptions, especially with regard to food strategies and food security. We can then relate intergroup differences between mobile and stationary RV households to both U.S. cultural and RV subcultural expectations as well as individual expectations of the RV and its space utility when used as a home or long-term dwelling.

Chapter 2: Article 1

Limitations: Exploring Full-time RV Household Incomes, Spaces, and Food Strategies in Relationship to Food Security

Odhran M. McGonagall and Lisa L. Price

Introduction

Currently and historically in the United States, recreational vehicles (RVs) have served as low-income housing options (Miller & Evko, 1985; Williams, 1995). In the state of Oregon, where seasons are generally mild, the RV may be viewed as a reasonable option for a year-round home for many with financial constraints. Yet little research has been done on people using RVs as their primary homes. Despite there being few, if any, estimates on RV populations, RVs do serve as permanent, limited-space dwellings for a number of people in the U.S. (Ayers Counts & Counts, 2001; Williams, 1995). Yet, in the U.S., where living spaces are generally larger than in other parts of the world, small living spaces can be expected to exacerbate limited-income situations especially with regard to food security (Richards & Smith 2006; Hoisington, Schultz, & Butkus, 2002). To compensate for common cash shortages in relationship to food budgeting, research shows that low-income households seek affordable food procurement strategies that include big-box store shopping, bulk shopping, and large-quantity discounts (Dammann & Smith, 2010; Webber, Sobal, & Dollahite, 2010). However, adequate storage space is a clear necessity for larger packaging and stocking up on food supplies, and the RV offers very little space when compared to other standard U.S. homes (Ayers Counts & Counts, 2001; Williams, 1995).

In addition to food shopping strategies, a food coping strategy that can be used by low-income families is self-provisioning or alternative food procurement. Self-

provisioning can include hunting, fishing, gathering, gardening, and canning. The importance of game wildlife and fishing as a possible food source for the poor cannot be overlooked (De Marco, Thorburn, & Kue, 2009; Reimer, 2006; U.S. Fish & Wildlife Service, 2011; Vaughan & Vitousek, 2013). Yet, reliance on any of these alternative food procurement strategies calls for refrigeration or freezing as well as cupboard or pantry space for canning. Low-income RV dwellers are likely to find themselves not only short on cash, but short on required food storage space, meaning they must develop other food coping strategies for RV living. The full-time RV household offers an opportunity to extend anthropological research on food security by studying the relationship of limited kitchen spaces and domestic food security among those by and large living in poverty. The objective of this study is to investigate potential limitations of income when paired with housing space in relationship to food security. The research asks if the space limitations of full-time RV living exacerbate food insecurity among low-income inhabitants. To answer this, we will explore the income levels, food patterns, strategies, and assessments of RV living by RV dwellers.

Background

RVs are defined as vehicles and can be generally categorized as campers, fifth-wheels, motorhomes, travel trailers, and touring-specific vans (Figure 1) (RVIA, 2015; RVDA 2014). RVs are considered inadequate as homes for a number of reasons. They are coded as travel vehicles, complying with travel-purposed construction requirements by the U.S. Department of Transportation (DOT, 2014). As homes, RVs can be limiting to full-time inhabitants in terms of size, construction materials, repair costs, and social marginalization (Ayers Counts & Counts, 2001; RVIA, 2011; Williams, 1995).

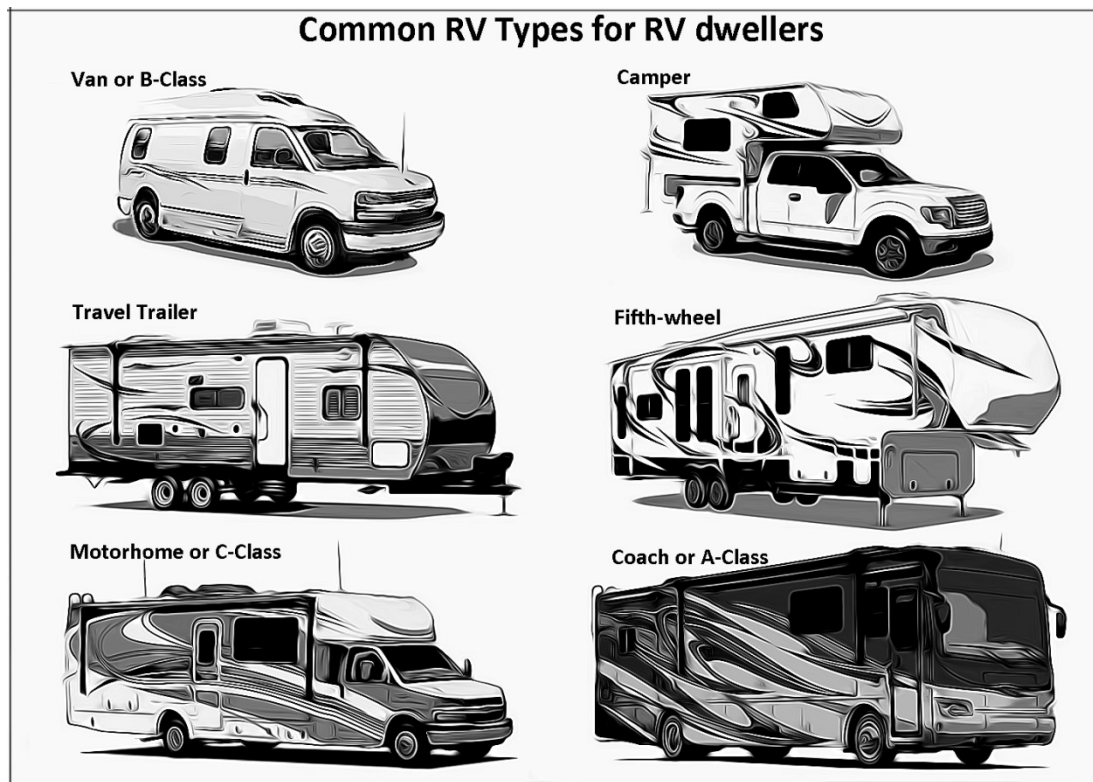


Figure 1. Common RV Types for RV Dwellers (McGonagall Illustrations, 2015).

RVs, when used as primary homes rather than travel vehicles, are commonly assumed to be low-income, non-viable dwellings (Marin, Los Angeles Committee Chair for Social Justice, 2003; Homes on Wheels vs. City of Santa Barbara, 2003, 2009, 2011). While a number of cities have imposed ordinances against RV parking and dwelling in non-designated spaces in order to address social complaints about stationary and somewhat permanent or “full-time” RV inhabitants living in RVs on city streets, there are no current figures on the number of RV dwellers living in the United States (U.S. Census Bureau, 2000; 2010). Further, while it is generally assumed that these full-time, stationary RVers are otherwise homeless, impoverished, or living on limited incomes, there are few if any studies on these RV dwellers and their housing and food situations in the United States. Despite common marginalization of RV dwellers as a group, and a

common social perception that RVs represent substandard dwellings in the U.S., there are also no estimates of the average size of RVs being lived in.

The smaller-space design of the RV is well-suited for its temporary and mobile use as a vacationing vehicle (Ayers Counts & Counts, 2001; RVDA, 2011). However, full-time RV dwellers are likely to face storage capacity limitations due to overall size limitations. Few RVs have near the 70 square feet of bedroom space deemed adequate by the American Public Housing Association's (APHA) Guidelines (1986). For smaller families or couples, many RVs also fail to have the 250 overall interior square footage of the APHA's required livable space for two persons (APHA, 1986, p. 37). When considering small-space dwellings, a limited number of studies have addressed how food choices can be impacted by inadequate living space and storage space, especially when paired with low-level incomes (Richards & Smith 2006; Hoisington, Schultz, & Butkus, 2002). One such study focuses on the food storage space in homeless shelters. In addition to limited finances and limited food access, shelters offer only minimal storage capacity for food, thereby influencing the quantities and even types of food purchased (Richards & Smith 2006). In cases similar to the homeless shelter, limited storage capacities add to a smaller-packaging/higher-grocery-cost phenomenon, contributing to greater limitations in food choices. When paired with lower incomes, this can exacerbate stress, malnutrition, and other existing health issues prevalent in low-income communities (Basiotis & Lino, 2002; Institute of Medicine, 2011; Lohse, Bailey, Krall, Wall, & Mitchell, 2013).

Existing studies exploring the relationship between food storage space and food security (Richards & Smith, 2006; Hoisington, Schultz, & Butkus, 2002), not only address the constraints of limited incomes when dealing with space limitations, but also

address some of the requirements for adequate food utilization. Food utilization is one of the four key pillars of food security and includes “cooking, storage, and hygiene practices” as well as “feeding and sharing practices” (Frankenberger, 1996; Maxwell & Smith, 1992; WFP, 2014). When these practices are insufficient for food security in the household, they are defined as “limitations” to food security (Maxwell & Smith, 1992; WFP, 2014). We might therefore expect that where incomes are already limited, and various aspects of kitchen space are limited in relationship to cultural standards, we will see an exacerbation of food insecurity in RV households.

Methodology

Research Location and Population

This paper focuses on a stationary RV dwelling population group from a larger study of 198 mobile and stationary RV households. For this paper, eight long-term-stay trailer parks were chosen for the research. Long-term-stay RV and trailer parks used for full-time living were defined as parks that provided parking pads, electrical and water hook-ups, and sometimes cable and internet services (Figure 2). The term “long-term” corresponded specifically with trailer parks and camps that had no maximum-stay rule, or that allowed at least one year at a time of ongoing tenancy by RV occupants. RV participants were required to have spent a period of at least six months of consecutive RV living to be considered full-time RV dwellers. This is the time it takes to establish residency in most states and is a period of time that reasonably allows a place of dwelling to become somewhat more than a temporary living arrangement. However, most RV dwellers stated they lived in their RVs for lengthier durations than our minimum full-time living requirement.



Figure 2. A Long-term-stay RV Park in Corvallis, Oregon (2013).

All long-term-stay trailer parks were located in suburban and urban areas in Oregon and each were within two miles to town services and standard grocers. Towns and cities included in this research were Albany, Bend, Corvallis, Eugene, Gresham, McMinnville, Salem, and Troutdale. A number of the major grocers nearest to the surveyed trailer parks had accompanying fuel stations with fuel points discounts based on grocery purchases. All long-term-stay trailer parks chosen for this study were located in towns or cities with at least minimal public transportation services (bus systems). Some had better transportation accommodations (e.g., Gresham's MAXX light rail, extended routes, and more frequent services) than others.

Each long-term-stay park was located at least one to five miles to the nearest small restaurants and fast-food chains, 24-hour convenience stores, primary and secondary schools, lawn supply and gardening stores, hospitals and clinics, tire shops, parts stores, and auto mechanic services, but only Troutdale had a nearby (within five

miles) RV repair shop. Long-term-stay parks in Albany, Corvallis, Eugene, and Salem all offered space beyond the paid RV parking pad for personal or community gardening. None of these long-term-stay parks offered extra refrigeration or food storage lockers.

Data Collection and Analysis

A survey instrument was developed in 2013 to measure RV household food security in relation to food utilization as defined by the World Food Programme (1996). This was done by using the USDA's Guide to Measuring Household Food Security and the Food Security Core-Module Questionnaire (USDA, 2000, p. 22) while adapting a subset questionnaire to measure space assessments. Surveys were distributed among stationary RV dwellers from the eight chosen long-term-stay trailer parks in Oregon from June through September, 2013. Recruitment of respondents was conducted by speaking with park managers and posting recruitment materials in eight selected long-term-stay park offices throughout the state of Oregon. Four hundred and fifty surveys and return postage-paid envelopes were left with park managers and in park laundry facilities to be picked up and returned voluntarily by park residents through the mail from June through September, 2013. The sample includes 95 surveys from stationary RV occupants from all eight of these long-term-stay parks.

The survey contained questions on basic demographic information such as age, sex, income levels, number of household members, and employment. Other questions inquired about RV ages, RV sizes, kitchen space assessments, duration of RV living, food preparation and storage, obtaining food, food security, and other associated aspects of lifestyle satisfaction and comfort. Income levels for this study were based on the number of occupants per household and actual yearly income levels (HUD, 2013).

Income levels were then ranked as percentages of the median household income level in Oregon (U.S. Census Bureau, 2013; HUD, 2013). RV dwellers' employment status was a variable used to provide information on retirement, work, and disability as a basis for interpreting information on household conditions and income levels. Survey answers were sorted and categorized as 1) demographic information; 2) procurement strategies; 3) budgeting and shopping patterns; 4) food utilization patterns, including storage, preparation, eating, and clean-up; and 5) kitchen space assessments. These answers were then coded for SPSS analysis. This research was approved by the Institutional Review Board, Oregon State University.

Results and Discussion of Results

There were a total of 95 respondents representing 95 full-time stationary RV households, with a majority working full-time. Retirees made up 28.4% of these RV households, with 40% of all retirees stating they were over the age of 60. Eighteen percent of retirees were over the age of 70, with three participants stating they were 80 years of age. Unemployed, disabled individuals made up 9.5% of RV dwellers. Two participants specified that they were working homemakers, while one individual identified as an employed volunteer worker. Figure 3 shows employment status for the 95 RV dwellers surveyed.

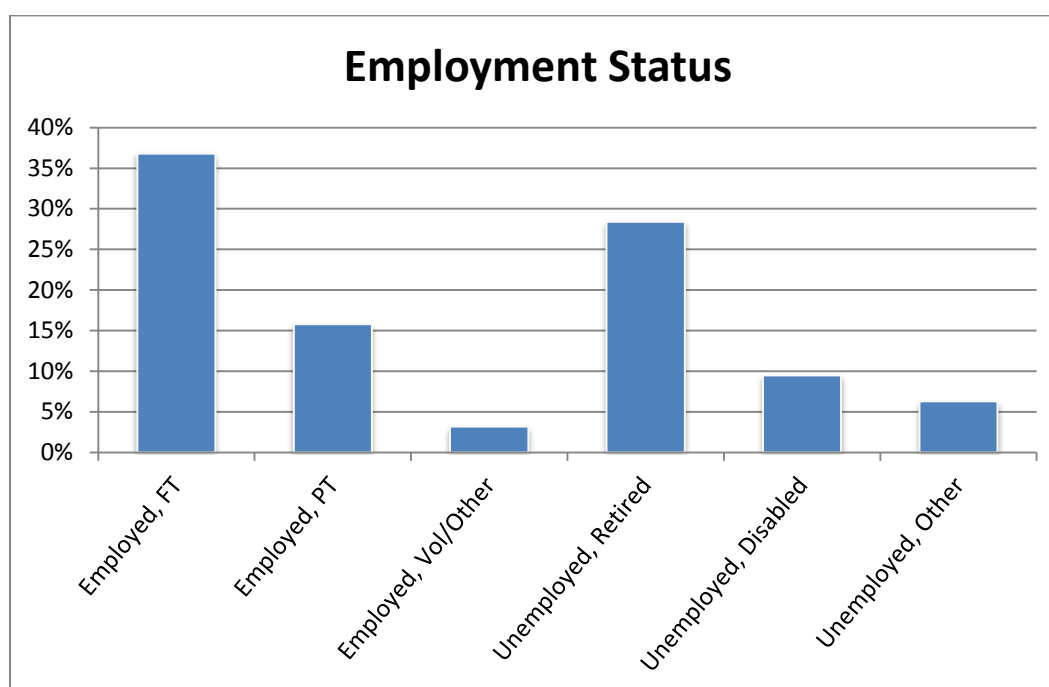


Figure 3. Employment Status for RV Dwellers (N=95).

Of 95 stationary RVers surveyed, 64.2% could be classified at low-income levels or below 50% of median yearly income levels in Oregon. The median yearly income level in Oregon was \$45,010 in 2013; so 50% of the median was \$22,505 for a single-person household (U.S. Census Bureau, 2013). 35.8% of RVers surveyed indicated they made more than 50% of the yearly median. Due to limited studies on RV dwellers, other information was collected to establish a baseline of information on stationary RV dwellers and their RV homes with regard to income, food security levels, and food patterns associated with RV living.

Campers and vans were the smallest of RVs being lived in. Campers and vans used by survey participants as homes never provided more than 100 square feet of interior floor and living space. While there are campers with slide-outs, or rooms that extend beyond the RV's traveling size to provide extra space when stationary, none of the camper or van dwellers surveyed had slide-outs in their RVs. Among RV types, campers

and vans had the fewest number of long-term inhabitants (n=8) and were therefore grouped together, since these RVs were of similar sizes. The average number of household occupants living in campers and vans was one person per household, which differed from other RV types. This was likely due to the relatively small interior space of campers and vans. The other three RV types – trailers, fifth-wheels, and motorhomes or coaches – averaged two persons per household. All stationary RV type households from these long-term parks lived in their RVs for an average of 11 to 12 months per year. Among the different RV types in this study, trailers were the most common (n=33). Survey comments by RV dwellers supported the popularity of trailers; many expressed that trailers were the easiest of RVs to find as used vehicles in decent shape and at low costs.

In comparison to campers and vans, trailers and fifth-wheels were generally much larger. In terms of initial cost for lower-income families, trailers and fifth-wheels were similar in price when purchased either new or used and when featuring similar amenities (Conversation with Wager's Trailer Sales Manager, Salem, OR, 2013). One RV salesman described modern trailers and fifth-wheels as "veritable doppelgangers," requiring only personal preference to make a choice between the two. Motorhomes and/or coaches were similar in size to trailers and fifth-wheels but were commonly viewed by respondents as the largest of RVs. Built initially as higher-priced RVs, motorhomes and coaches serve as both the truck and trailer in one. However, motorhomes, as self-sufficient mobile vehicles that require engine service in addition to standard RV repairs, are generally more expensive up front and in the long term. This may make motorhomes less reasonable for low-income households seeking cost-efficient RVs.

According to the data from this study, each of the RV-type household groups averaged markedly different levels of income. Although this was anticipated for camper and van dwellers, the data for trailer and fifth-wheel dwellers did not coincide with initial assumptions. In particular, the data shows that there are distinct differences between fifth-wheel and trailer dwellers related to participant age, RV age, RV size, RV number of slide-outs, and household income levels. Where trailer and fifth-wheel dwellers were initially assumed to be of similar income levels, trailer dwellers (n=33) averaged income levels just above the poverty line, at 30-40% of median income levels. Fifth-wheel dwellers (n=26) had somewhat higher income levels, averaging 40-50% of the median. Like trailer dwellers, fifth-wheel dwellers were still categorically among low-income households. Lastly, those living in motorhomes or coaches (n=28) averaged income levels above HUD's low-income-level marker, or above 50% of median incomes in Oregon. A profile for comparison of RV dwellers by RV type is shown in Table 1. The values within the table represent mean values for occupant age, income levels, RV age, RV size, and number of slide-outs for each RV type.

Table 1. Profile of RV Dwellers by RV Type (N=95).

RV Type	Mean Occupant Age	Median Income Level Percentage¹	Mean Age of RV in years	Mean Size of RV in square feet	Mean Number of Slide-outs
Trailer (n=33)	48	30-40% of median	19	176	0.45
Coach/Motorhome (n=28)	54	Above 50% of median	11	279	1.92
Fifth-wheel (n=26)	58	40-50% of median	10	270	2.42
Van or Camper (n=8)	53	20-30% of median	16	87	0.00

¹ Income Level is based on median income levels in Oregon.

An important aspect of RV age and type is that newer RVs offer more spacious interiors than older RVs. A bivariate analysis of the data supports this assumption. At $p < .001$, RV age has a significant negative correlation with RV size. In other words, the

older the RV, the smaller it is in comparison to newer RVs. The industry's addition of the slide-out over the past twenty years helps to explain this correlation. Slide-outs, which are essentially rooms within the greater space of the RV, can be extended when the RV is parked. This allows for extra living space without necessarily adding to the travel-length of the RV, a boon to small-space RV dwellers. However, slide-outs were only minimally available prior to the year 2000. The availability of the slide-out in newer RVs is important when evaluating the RV age and space limitations that might exacerbate lower-income related food insecurity.

RV Household Food Security

The Guide to Measuring Household Food Security and the Food Security Core-Module Questionnaire (USDA, 2000, p. 22) were used as the primary measures of RV household food security. These were used to gather participants' household assessments in relation to one of the following four statements:

1. We have enough to eat and the kinds of food we want (food security).
2. We have enough to eat but not always the kinds of food we want (mild food insecurity).
3. We sometimes do not have enough to eat (moderate food insecurity).
4. We often do not have enough to eat (extreme food insecurity).

These assessments not only helped to determine levels of food sufficiency in RV households, but also called for other questions to assess household food conditions (USDA, 2000, p. 63). Using these same measures, the 95 stationary RV households assessed their household food situations. Assessments were then paired with levels of food security and food insecurity based on the literature and compared to income levels for RV dwellers. Income levels were given descriptive values based on the percentages provided by the U.S. Department of Health and Human Services (USDHHS) Poverty

Guidelines from 2013. For example, “Poverty Level/Low Income” was defined as an income level at or near the poverty threshold, which included RV households (n=27) living at 20-35% of median household income levels in Oregon. The “Moderately Low Income” level was defined as households living at 36-50% of median income levels in Oregon (n=34). Those above the 50% range of median income levels (n=34) were defined as “Above Low Income” in compliance with HUD’s designation for low-income housing assistance (2013). Table 2 shows RV households by income levels in relation to food security levels. Totals are given for the combined food insecure and for all food secure RV households from all income levels.

Table 2. Number of RV Households by Income Level to Food Security Level.

Income Level	Extremely Food Insecure	Moderately Food Insecure	Mildly Food Insecure	Food Secure
Poverty Level/Low Income (n=27)	5	6	6	10
Moderately Low-Income (n=34)	1	11	8	14
Above Low-Income (n=34)	0	4	6	24
Total Combined Food Insecure and Food Secure	47			48

According to Spearman's rho, at $p < .001$, there is a significant positive correlation between household income level and household food security level. As anticipated, lower income levels coincide with higher levels of food insecurity, and RV households above low-income levels were the most food secure. However, nearly one-third of RV households above the low-income threshold also indicated mild to moderate food insecurity. This may point to other RV household factors such as space limitations contributing to food insecurity. However, a limitation here is that since low-income households were the focus, income levels were gathered by dollar range values up to a

level of 50% of the median income level in Oregon with a maximum of six household members. This was done to better assure accuracy with regard to participant responses to income levels (Bernard, 2011). All incomes above the median level were gathered as “above” a set income value and not by actual earned dollars per year. This study is therefore unable to determine whether households well above the low-income bracket or those just slightly above the low-income bracket are more likely to demonstrate mild to moderate food insecurity. However, it is important to establish that a considerable percentage (29%) of those above low income levels in RV households experience mild to moderate levels of food insecurity. Additional income data would be required to test whether higher income levels correlate with food insecurity in smaller-space dwellings.

Following the Guide to Measuring Household Food Security and the Food Security Core-Module Questionnaire (USDA, 2000, p. 63), a questionnaire subset helped to determine which household food patterns and strategies commonly coincided with lower levels of food security. Participants were asked to list and explain any food budgeting or food shopping strategies they used to obtain food each month. A checklist of food budgeting strategies was included on the questionnaire, and open spaces were also provided for additional answers. RV households were also asked about food storage strategies. Just as homeless shelter dwellers were unable to purchase large quantities of foods or stock up (Richards & Smith, 2006), it was reasoned that very few low-income RV dwellers would rely on bulk quantity purchases to maintain food stores due to the general lack of adequate food storage space in the RV. Figure 4 shows the small refrigerator and limited pantry storage shelf in an RV kitchen, along with an exterior refrigerator and other household items kept outside at another RV dweller’s site.



Figure 4. RV Refrigerators. The small refrigerator and pantry shelf in a 126 square-foot 1987 fifth-wheel (left). An outdoor refrigerator and other common outdoor features of the stationary RV dweller (right).

In light of the general space limitations in the RV, it was felt that lower-income RV dwellers would develop and rely on other food strategies to overcome space limitations in order to alleviate hunger. As anticipated, many full-time stationary RVers stated that bulk shopping was not feasible for their small spaces as they had limited storage capacities for large quantities of items. One participant stated, “We shop with the idea that we have limited space. We buy what fits in the cupboards and hope it lasts until next month.” Another noted, “If larger packages cost less, I will buy these and repackage them at home to fit.” Multiple comments on surveys such as these indicated that perceptions of limited space were common among RV dwellers’ thoughts when shopping. These limitation perceptions within the RV in turn shaped shopping patterns and storage strategies such as purchasing and repackaging larger items to allow them to fit into smaller spaces.

Nearly all RV households expressed that they used various food strategies. Some strategies such as gardening, SNAP use, and shopping at stores that offered fuel savings were more commonly expressed than other strategies like hunting and shopping with others to save fuel or grocery costs. The various food strategies were sorted and determined to fit into four basic categories related to food acquisition. Another category was added based on strategies that employed alternative storage for food either inside or outside the RV. These five categories were defined as Family/Friend Food Sharing, SNAP/Food Banks, Alternative Food Procurement, Money Saving/Budgeting, and Alternative Food Storage.

Family/Friend Food Sharing included food strategies such as eating with other households on a regular basis or regularly receiving food from parents or other family members. The category of SNAP/Food Banks included monthly use of SNAP (state-provided funds for food assistance), or regular trips to food banks to supplement other household food. Alternative Food Procurement included gardening, fishing, hunting, gathering, and canning. Data showed that gardening can be an important food procurement strategy for a number of RV households. Nearly half of the RV households that participated indicated that their long-term trailer parks offered some form of gardening space to tenants (n=47). Of those that had gardening space available, 71% gardened and indicated gardening as a means of obtaining food for the RV household. The Money Saving/Budgeting category included shopping where fuel savings were offered, coupon or club card discount shopping, shopping for generic and/or sale items, and shopping for more food at one time to limit trips to the store or to limit spending each month. Bulk shopping or larger-package (family-size) purchases were included as well in

this category, along with monthly food budgeting, and shopping at larger, lower-cost big-box grocery retailers such as Costco.

Many RV households indicated that they required other means of storage beyond the storage provided for food in the RV. One of these households stated they used inexpensive plastic coolers for food storage during the winter months. Others commonly purchased outdoor refrigerators and freezers for the same purpose (Figure 4). The Alternative Food Storage category was comprised of food strategies that included storing food in RV cupboards not intended for food (such as in the bathroom or bedroom); storing food in other RV spaces, such as on the table, on desks, and under beds. This category also included storage of food outside, in other vehicles, in outdoor refrigerators/freezers, or coolers, or in bins beneath the RV (e.g. in an RV basement). Figure 5 shows the usage of the five food strategy categories across each of the four different levels of food security demonstrated by RV households.

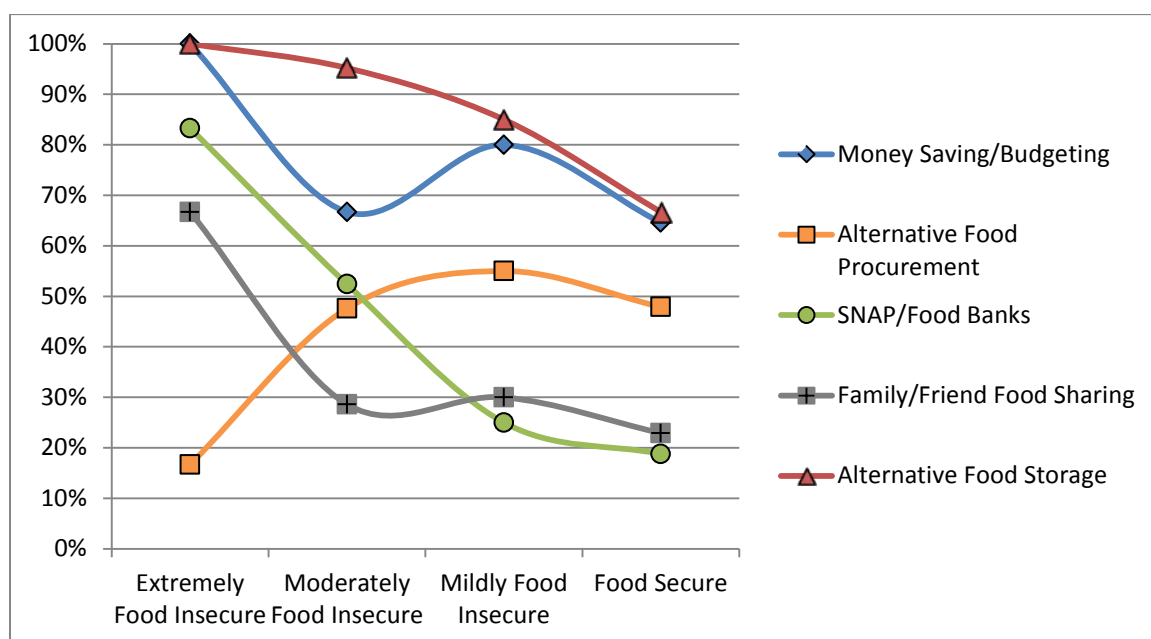


Figure 5. RV Household Food Strategy Usage by Food Security Level.

Though limited in numbers among RV dwellers, those with extreme food insecurity utilized SNAP and food banks more than those of other food security levels. A greater number of food insecure RV dwellers were anticipated to utilize these strategies. However, those with extreme food insecurity relied more heavily on alternative food storage and money saving or budgeting strategies than households from other food security levels. With the most food insecure households correlating with lower income levels and living in the smallest RVs, greater utilization of money saving and alternative food storage strategies may be easily understood.

Nearly 70% of the extremely food insecure also relied on family and friends for food sharing whereas only 20-30% of those from moderately and mildly food insecure households, as well as food secure households, used this strategy. The extremely food insecure were less likely than the other groups to utilize alternative food procurement strategies such as gardening, fishing, or hunting. This may be due to a need to purchase other items to afford alternative food procurement in many cases, such as fishing rods, gardening tools, seeds, soils, or hunting equipment. Where incomes are limited, alternative food procurement may in fact require disposable income not available to the extremely low-income and food insecure. In addition, the extremely elderly may not be able to garden, fish, or hunt for food, making this option of food procurement less reasonable for them. Further questioning of participants as to the reasons for choosing specific food procurement strategies while not relying on other strategies could form the basis of a subsequent study.

Earlier, RV age and RV size were shown to be negatively correlated to each other. In addition, these variables are increasingly important when analyzing them in relation to

income levels and food security. Data shows that RV square footage and RV age correlate with RV household income levels. Using a two-tailed Spearman's rho analysis for ranked correlations, Table 3 shows where correlations are statistically significant at $p < .01$ in relation to RV household food security levels.

Table 3. Significant Food Security Correlations for Stationary RV Dwellers.

	Correlation Coefficient	Significance
Income Level	.332**	.001
RV Age	-.308**	.002
RV Size - Interior Square Footage	.287**	.005

** Correlation is significant at the 0.01 level (2-tailed).

In answering our research question, where $p < .01$, there is a significant positive correlation between RV size, or calculated interior square footage, and the level of household food security. Within larger RVs, food security is more likely, and among the smallest RVs, there is the greatest likelihood of extreme food insecurity. There is also a significant negative correlation at $p < .01$ between RV age and household food security. As RVs age, food security in the RV tends to decline. Not only were RV age, size, and income levels statistically significant to food security levels, they were significantly correlated to each other. At $p < .01$, RV age was negatively correlated to income, so that as income levels increased, RVs were typically newer. Similarly, newer RVs were positively correlated to larger RVs at $p < .01$.

Alternative Food Storage was shown previously in Figure 5 to be the most commonly indicated food strategy among RV households across all levels of food

security. Recognizing this, we felt RV space assessments between the food secure and food insecure would tell us a great deal about how space was perceived in relation to actual measured RV spaces. These comparisons further tell us about correlations that may exist between measured and perceived spaces and food security levels. Measured RV interior spaces were compared to APHA (1986) standards and definitions for adequate living space based on the number of members per household. Figure 6 shows the percentage of food secure and food insecure RVers living in smaller spaces than what the APHA deems adequate for living. This chart also shows that more than 90% of all food insecure RV households feel that overall food storage space is inadequate.

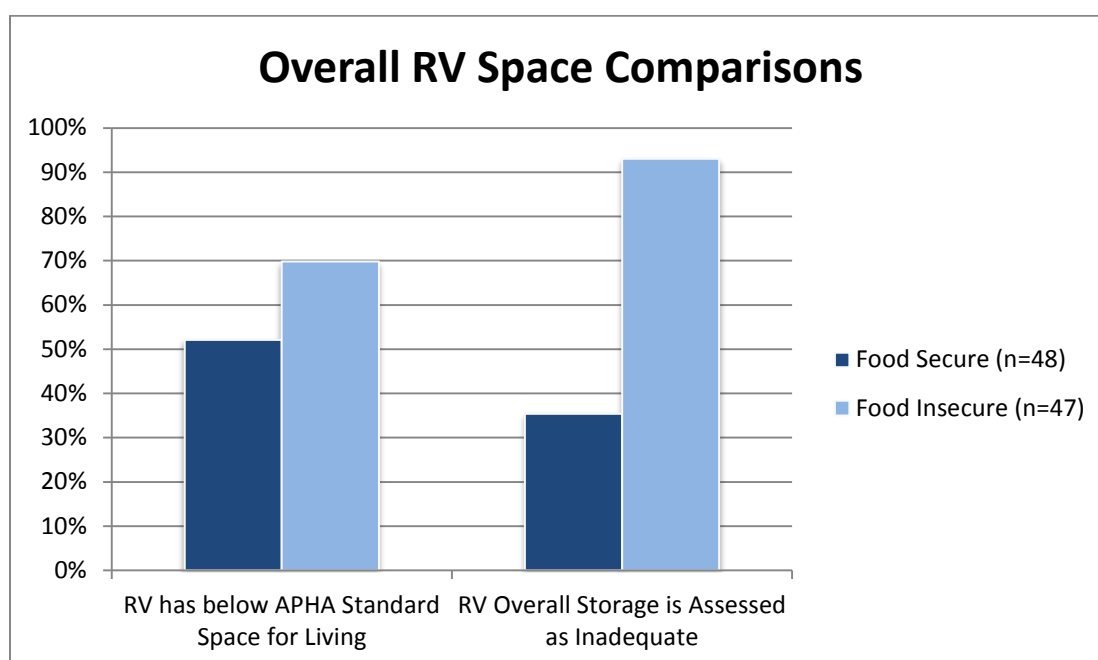


Figure 6. Overall RV Space Comparisons for Food Secure and Food Insecure Groups.

In nearly every food space measurement for the RV kitchen (with the exception of the proverbial kitchen sink), more than 50% of food insecure households felt that the kitchen spaces tied to food utilization were limited. The kitchen sink was assessed by 48.8% of the food insecure as smaller than desired for food sanitation, hygiene, and

dishwashing. Food secure households viewed these kitchen spaces much differently (Figure 7).

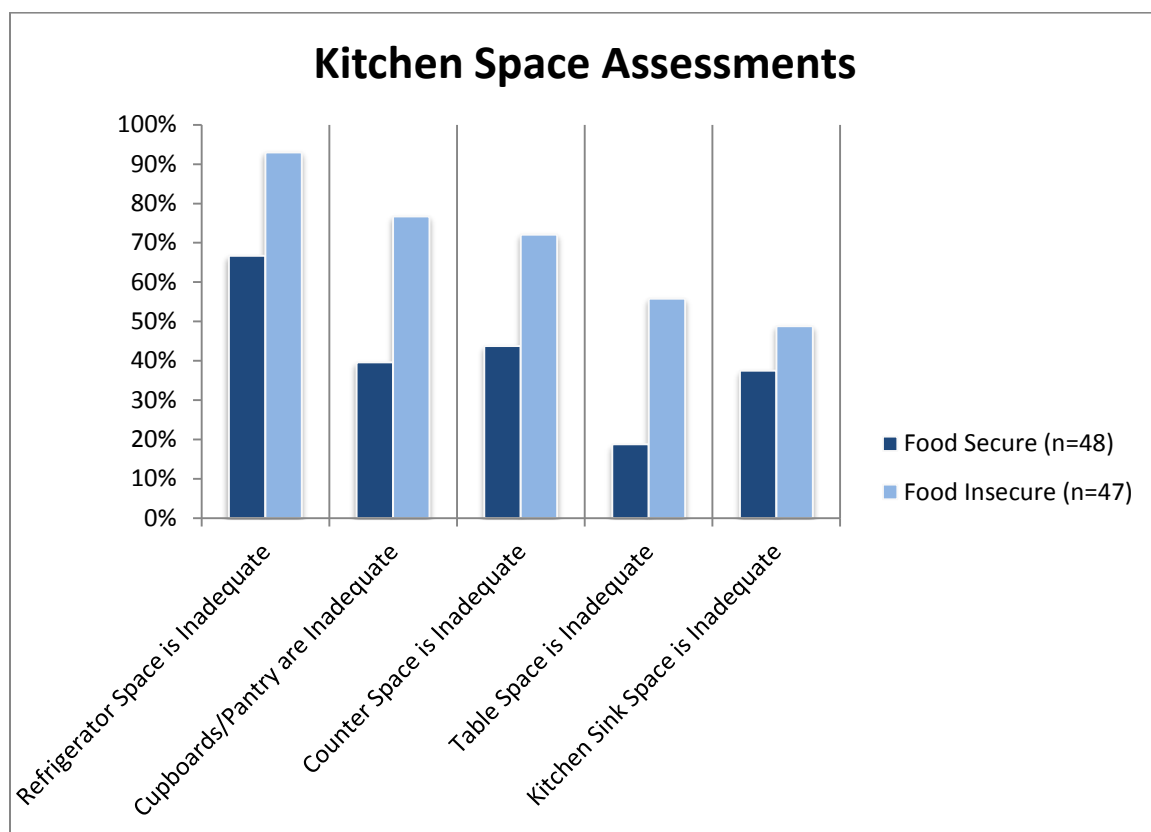


Figure 7. Food Insecure and Food Secure RV Kitchen Space Assessments.

The information depicted in Figures 6 and 7 helps to substantiate the importance of overall interior space, but it also indicates the importance of living conditions and perceptions that drive kitchen space assessments in relationship to household food security. Beyond the calculations of interior square footage alone, categorical assessments of the RV kitchen indicate greater space inadequacy among the food insecure. Space limitations in the kitchen across all categories are expressed by a greater number of food insecure households than by food secure households. Because these categories are based on perceived housing requirements for food storage, food preparation, food consumption, and clean-up, in order to ensure proper food utilization as

defined in the literature, households that experience inadequate refrigerator, cupboard, and storage spaces in combination are likely experiencing food insecurity due in part to limitations of suitable food spaces.

To test RV kitchen space limitations and food insecurity levels for statistical significance, a scale was used to develop a kitchen adequacy score corresponding with participants' five kitchen space assessments that were related to food utilization. Scores ranged from 0 to 5. Participants that answered negatively to all five kitchen space assessments received the lowest kitchen adequacy score of 0, while participants that answered positively to all kitchen space assessments received the highest kitchen adequacy score of 5. Inadequate refrigerator space was the most frequent complaint of RV dwellers expressing inadequate kitchen space (n=72). This was followed by inadequate cupboard or pantry space (n=53) and inadequate counter space (n=52). Among the aspects related to food utilization, food storage was considered to represent the greatest limitation of kitchen space according to participant assessments. Food preparation and clean-up followed storage as the next most limiting aspects of kitchen space and food utilization with 39 of the 95 participants indicating that sink space was inadequate. Lastly, table space for food consumption was considered the least limited in the RV. Still, one-third of all participants felt the table space was also limited (n=33).

In addition to the expected income correlations to food security, in our analysis we found that the kitchen adequacy score had positive statistical significance to food security. For statistical testing, we again divided our food secure and food insecure households into four groups: extremely food insecure, moderately food insecure, mildly food insecure, and food secure. Dividing food security and food insecurity into four

groupings allowed a more thorough investigation of the kitchen adequacy score in relationship to various levels of food insecurity. After testing for homogeneity, we decided to use a Kruskal-Wallis non-parametric test. Doing so, a chi-square output allowed us to calculate an effect size estimate for food insecurity based on kitchen adequacy scores. At chi-square 14.792, 15.7% of the variability in mean rank kitchen adequacy scores could be accounted for by food secure/insecure group type. From a behavioral science standpoint, this was considered a decent effect size. Statistical significance at $p < .01$ indicated that high kitchen adequacy scores were positively correlated to food security whereas the lowest kitchen adequacy scores correlated with extreme food insecurity levels. Further post-hoc Kruskal-Wallis testing showed a difference of kitchen adequacy mean rank scores between the extremely food insecure group and food secure group with statistical significance at $p < .01$ (chi-square = 8.140). Extremely food insecure and mildly food insecure kitchen adequacy score differences were significant at $p < .05$ (chi-square = 5.207). Moderately food insecure and food secure kitchen adequacy score differences were also significant at $p < .01$ (chi square = 8.507).

Conclusion

When housing interior space is measurably limited in comparison to the American Public Health Association (APHA) standards, low-income, food insecure RV dwellers tend to assess housing and kitchen spaces as more limiting in terms of kitchen adequacy than those with higher incomes and food security. Based on our findings, RV dwellers on limited incomes are more likely than those with higher incomes living in larger RVs to experience food insecurity. These two groups also demonstrate disparate food strategies

associated with RV living. The limited spaces of the RV exacerbate food insecurity by limiting the ability to carry out proper food utilization in the home, especially where incomes are already limited. To overcome some of the impositions created by space and financial limitations, the most food insecure RV dwellers rely on family and friend food sharing and alternative food storage, such as adding outdoor refrigerators or storing food in places not designed for food storage. To offset other income limitations, the most food insecure RV households utilize regular budgeting strategies, shop at big-box stores, and use SNAP and food bank benefits. Food insecure RV households are, however, unlikely to utilize the same alternative food procurement methods that food secure RV households commonly employ, such as hunting and fishing. This is perhaps due to associated costs with these activities or other limiting factors such as proficiency or being very elderly or disabled. However, when gardening space is offered at long-term trailer parks, low-income RV households tend to take advantage of this food-producing space.

An unexpected finding in this study showed that while the smallest, oldest, and lowest income RV households were likely to suffer more extreme levels of food insecurity, 40% of these households indicated that the RV provided overall comfort of living. In contrast, only 27% of food secure households indicated the RV served as a comfortable home. While the food secure were more likely to have larger RVs, this assessment may have been due to the generally higher income levels of food secure RV dwellers. This may have allowed them to perceive that they had other nearly affordable living options outside of their socially marginalized RV living arrangements. Due to the anonymity of this study, the understanding of comfort level assessments by RV dwellers was perhaps limited by a broad definition of the term and inability to follow up with RV

dwellers. Lower income households perhaps felt that the RV provided overall comfort of living, especially where little else (in terms of housing) was believed to be available.

We believe the results of this research can be useful in small-space housing development for limited-income families. This study may also serve as a guideline for small-space housing providers or shelters looking for ways to ensure greater food security for lower-income households. By providing additional storage or food lockers at trailer parks as well as gardening spaces, many RV dwellers experiencing space and financial constraints may be able to cross the threshold from moderate and mild levels of food insecurity to food security.

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Chapter 3: Article 2

When Less is More: Comparing the Incomes, Housing Space, Food Strategies, and Space Perceptions of Mobile and Stationary RV Dwellers

Odhran M. McGonagall, Seunghae Lee, Lisa L. Price

In modern times, many individuals, including those of retirement age in the U.S., often opt to live for several months at a time in mobile recreational vehicles (RVs). Whether intentionally scaling down to minimize the constraints and responsibilities of larger primary home ownership, or venturing out to meet other RV travelers, the RV lifestyle seemingly offers adventure, independence, and freedom from the constraints of aging at home (Ayers Counts & Counts, 2001; Hartswigen & Null, 1989; Williams, 1995). However, the RV can also be perceived as spatially limiting to people who live in them full time, as they offer much smaller living spaces than houses typically found in the U.S. (Ayers Counts & Counts, 2001). Simultaneously, others in the U.S., mainly due to limited-income circumstances, utilize less expensive and older RVs as primary homes (Williams, 1995). Choosing the alternative mobile RV lifestyle for middle-class retirees may be much different than the lifestyle of those living permanently in RVs. Knowing how RVs and their limited spaces are viewed and utilized by both groups of RVers can help us to answer social questions regarding perceptions of adequate housing space in the U.S. In particular, as kitchen space is generally small in RVs, they may offer an insightful look into ensuring food security through different food strategies for low-income and retirement-age individuals in smaller-space dwellings.

Thus, this study assumes that mobile and stationary RV dwellers are socially and culturally different. We compare mobile and stationary RV dwellers in order to examine how personal assessments of kitchen space relate to household food strategies and food

security. This study aims to contribute to the existing literature on food security by focusing on the relationship of demographic factors, kitchen space, and food strategies in both mobile and stationary RV households.

Using our research data gathered from ethnographic research in 2013 with both stationary and mobile RV households in Oregon, this research will contribute to a better understanding of factors involved in defining food security, especially in small-space dwellings. This research asks whether RV dwellers' ages, household income levels, RV ages, and RV sizes are similar between mobile and stationary full-time RVers. This research also questions whether food patterns, food strategies, and food security levels are similar or different among full-time mobile and stationary RV dwellers. In relation to food utilization measures, this research asks whether mobile and stationary RV dwellers have similar or different assessments of their kitchen spaces when utilized as full-time or long-term dwellings. Lastly, this research asks whether relationships exist between RV dwellers' kitchen space assessments and food security.

Using a transactional approach to conceptualize the meaning of home, Shin's (2014) Theoretical Model of Home is paired with Bourdieu's (1984) theory on cultural capital to define the home as more than just a place of shelter. These theories enable us to recognize cultural attitudes, income factors, and household needs working together to contribute to RV inhabitants' perceptions of housing space. In conjunction with space perceptions of the RV as a full-time dwelling, these theories allow us to compare and explain intergroup discrepancies and similarities in food patterns and space perceptions, especially where housing spaces are markedly similar for full-time stationary and mobile RV households.

RV Types and RV Dwellers

RVs are defined as campers, fifth-wheels, motor homes, travel trailers, touring-specific vans (Figure 1), or converted vehicles with sleeping and food preparation available in the vehicle (RVIA, 2015; RVDA 2014). The RV, when used as a home for several months at a time, offers a number of leisure, social, and activity-based opportunities (Ayers Counts & Counts, 2001). “Full-timers,” or full-time RVing populations, understood as leisure, mobile, and long-distance traveling RVers, are well-recognized in the U.S. as a subcultural group primarily comprised of retirement-age individuals with a distinctive nomadic lifestyle and identifying set of values (Ayers Counts & Counts, 1992, 2001; Hartswigen & Null, 1989; Williams, 1995). Social activity and intragroup relationships work to define mobile RVers and their associated lifestyle (Ayers Counts & Counts, 2001; Williams, 1995).

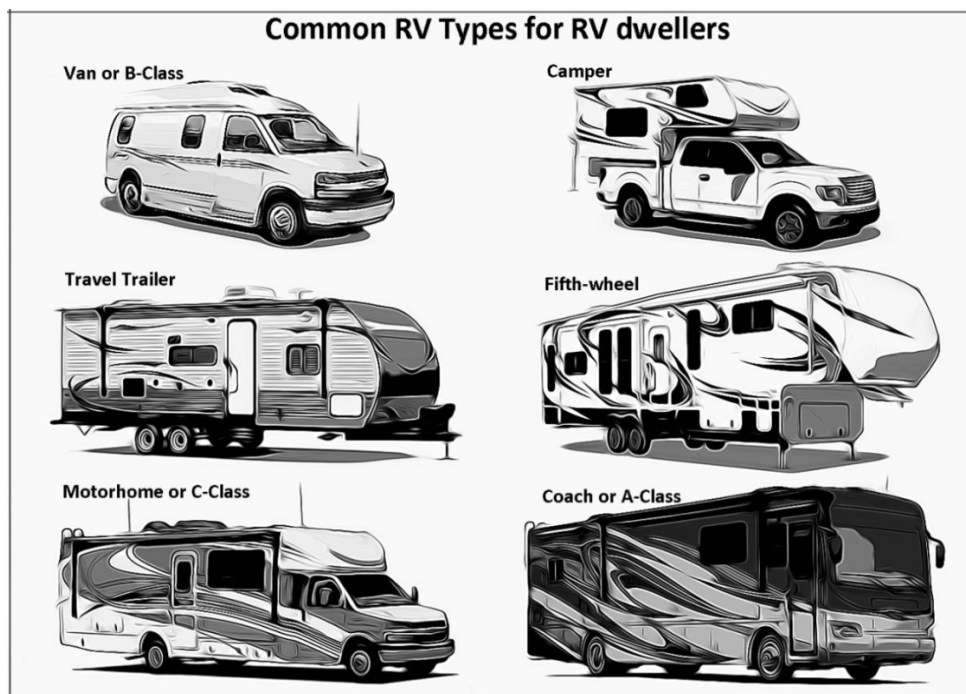


Figure 1. Common RV Types for RV Dwellers (McGonagall Illustrations, 2015).

Along with mobile RVers, there are stationary RV households in the U.S. that seldom travel, if at all. RVs, when they become more stationary primary homes, generally tend to fall into a state of disrepair as they age (Ayers Counts & Counts, 2001; Williams, 1995). This is due to the construction materials and coding of RVs as temporary shelters for vacationing purposes (RVIA, 2011; RVDA, 2014). The dilapidation of stationary RV homes leads to social marginalization of full-time stationary RVers, especially when their RVs are viewed socially as low-income and less-than-desirable housing options (Ayers Counts & Counts, 2001; Miller & Evko, 1985; Williams, 1995). The stationary RV is in opposition to active RV marketing strategies that work to define RVs as mobile and temporary leisure travel vehicles rather than primary homes (Curtin, 2001; Miller & Evko, 1985; RVIA, 2011).

As a primary home, the RV is among the smallest of U.S. homes in terms of overall square footage and household and kitchen space (APHA, 1986; HUD, 2013; RVIA, 2011). Despite serving as a home for many months at a time, the RV is not typically considered a home due to its construction properties, codes, mobility, and space limitations (APHA, 1986; HUD, 2013; RVIA, 2011). When the RV is parked and lived in for more than a few months at a time, the RV can perhaps be compared to other small housing options, such as mobile homes or tiny homes. As with mobile homes, RVs share the same humble origins as inexpensive, mobile, and temporary housing alternatives. As such, they tend to be stigmatized, and their occupants often referred to as “trailer trash” when the RV is continually used for this purpose (Irby, 1999; Kusenbach, 2001; Miller & Evko, 1985). While studies are limited on stationary RVers, social media indicates that low-income RV dwellers date back to after World War I and can still be found

throughout most of the U.S. (San Francisco Gate & Chronicle, 2013; NY Times, 2010). However, estimates for RV dwelling populations have not been calculated for the majority of cities or states in the U.S., meaning that actual or approximate numbers of full-time RV dwellers in America are unknown. The U.S. Census Bureau concedes this fact, stating that alternatively housed individuals living in RVs are difficult to estimate due to their transient nature (U.S. Census Bureau, 2000). This says nothing of RV dwellers that are not mobile at all.

From their relatively smaller living environments to the care and maintenance of their RVs for desired mobility, mobile RVers are distinctly identifiable in comparison to full-time stationary RVers. Though they live in the RV for many months at a time, Ayers Counts and Counts (2001) related that giving up a home base is not the actual practice of many full-time mobile RVers. Yet, this is commonly the case for stationary RVers. Understanding that there is a large community of RVers who live for several months in the RV as the home, whether mobile or stationary, Ayers Counts and Counts defined full-time RVers as “those who consider themselves to be *living* in the recreational vehicles...” (Ayers Counts & Counts, 2001, p. 48). Borrowing from the American Public Health Association’s (APHA) recommended minimum housing standards (1986), when used with an intent for more than temporary living, a full-time living space or dwelling can be defined as any enclosed space “wholly or partly used or intended to be used for living, sleeping, cooking, and eating” (APHA, 1986, p. 8). In a number of lifestyle situations, this explanation clearly defines the most basic requirements of a home. An RV used as a primary home does comply with this definition. However, full-time mobile RVers often have greater disposable incomes and own other primary homes when compared to

stationary RVers (Ayers Counts & Counts, 1992, 2001; Hartswigen & Null, 1989, Williams, 1995). As RVs are used as primary dwellings for months at a time, the mobile RV is commonly viewed as a means of social and leisure activity as well as an enjoyable temporary home (Ayers Counts & Counts, 1992, 2001; Hartswigen & Null, 1989, Williams, 1995). This is not the likely scenario for the stationary RV household, which is more commonly considered lower-income, immobile, and not part of an enjoyable cultural subgroup (Ayers Counts & Counts, 2001; Miller & Evko, 1985; Williams, 1995) (Figure 2).

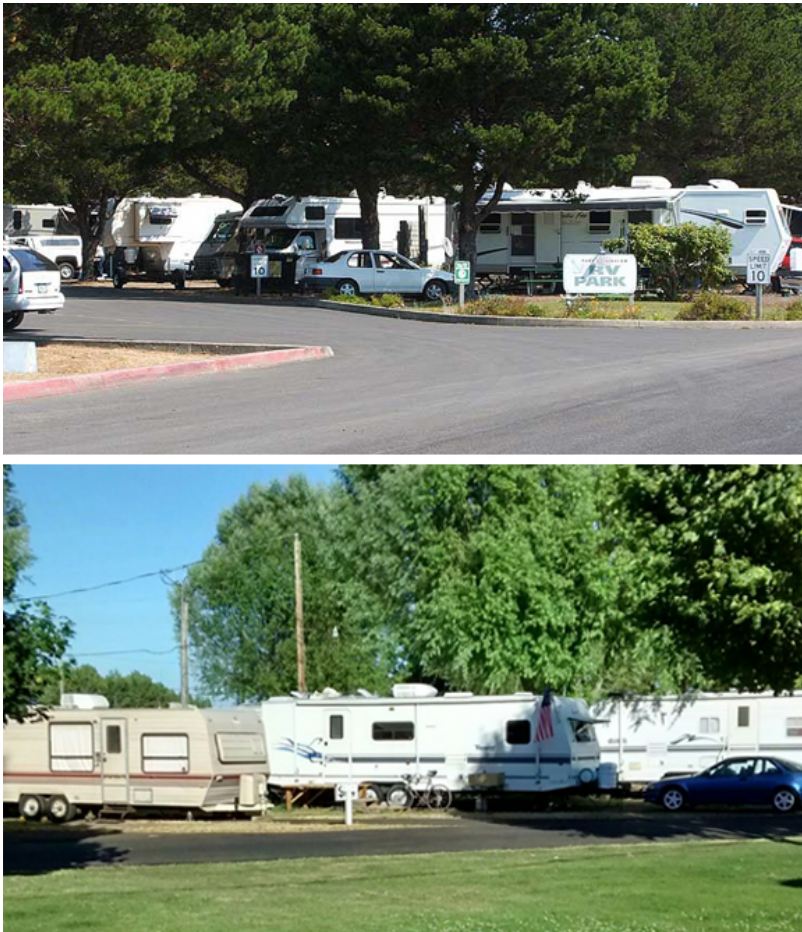


Figure 2. Full-time RVing in Oregon. A short-term-stay RV park for mobile RVers near Portland (top) and long-term-stay RV park in Corvallis (bottom).

Previous studies on RV dwellers have shown that while mobile, leisurely, full-time RVers are the most commonly researched RV population in the U.S., stationary lower-income RVers are recognized but generally overlooked in studies. Williams' (1995) study focuses on mobile full-time RVers or "RV nomads." But Williams also recognizes those who use the RV as a full-time housing alternative. Similarly, Ayers Counts and Counts (1992, 2001) discuss full-time stationary RV living as a "second stage" of full-time mobile RV travel when RVers are either no longer able to travel or find travel less desirable (Ayers Counts and Counts, 2001, pp. 243-244). While stationary living in RVs is not necessarily dependent on having previously been mobile, the stationary RVer does comply with Ayers Counts and Counts' (2001) definition in being identified as a full-time RV dweller who more permanently parks the RV at a trailer park, attaches a shed or cover, and uses the RV as the primary home.

Small-space Homes and Food Security

In addition to impacting comfort and well-being as well as being subject to social marginalization in many cases, RVs, when used as long-term dwellings or primary homes, have one distinct characteristic that must be addressed in household food security. These smaller shelters clearly tend to lack adequate kitchen spaces, especially when they are used for several months at a time. To define adequate kitchen space, it is important to understand food utilization, which calls for the proper storage, cooking, consumption, and cleaning and sanitation of food and food-related items (Maxwell & Smith 1992; WFP, 1996). It can be reasoned that for food utilization to take place, a certain amount of space must be allocated to these food-related necessities. Without the necessary space to carry out these tasks, it can be assumed that food security is likely to diminish.

In order to define space requirements for housing, we can look to the American Public Health Association's (APHA) Section IX of Recommended Minimum Housing Standards (1986). It states that for adequate housing, a living space should have "at least one hundred and fifty square feet of floor space" for a single occupant and "at least one hundred square feet of floor space for every additional occupant thereof" (APHA, 1987, pp. 37-38). Where RVs are generally smaller than the 250 square foot space requirement for two individuals, one might reason that adequate housing space and compliance with APHA standards does not exist.

To address possible space limitations in standard housing in the U.S., apartments, manufactured homes, and rental homes, according to the National Association of Home Builders (NAHB) survey of 2013, must have kitchen storage capacities and refrigeration capacities considered adequate, or comparatively similar to what is employed in standard American households. This requirement sets the stage for low-income rentals, giving them greater interior space requirements than RVs (Ayers Counts & Counts, 2001; Eure, 2005; Friedman & Krawitz, 2001). For example, Figure 3 shows the standard in RV refrigerators over the years. From small campers to larger trailers and fifth-wheels, the RV's standard six cubic-foot refrigerator ($1/3^{\text{rd}}$ the size of a standard U.S. household refrigerator) is still the most common RV refrigerator installed in RVs today (Dometic, 2014; Norcold, 2014, RVDA, 2013).



Figure 3. RV Refrigerators. A six cubic-foot Dometic RV refrigerator from inside a 1980s model GMC Kingsley motorhome (left) and a six cubic-foot Norcold RV refrigerator from inside a 2012 Arctic Fox 990 camper (right).

Where RV spaces are similar between RV mobile and stationary group types, and when the RV serves as a primary dwelling for several months at a time, understanding how limited kitchen spaces relate to space perceptions, food strategies, and food security in both mobile and stationary RV households depends to some degree on how the two RV groups define adequate housing and kitchen space. When compared to other options for travel and leisure, the mobile RVer may view the RV space differently than the stationary RVer. To the stationary RVer, the RV as a primary home may be more commonly compared to standard housing as opposed to leisure travel options. In such cases, the interior space of the RV might be expected to influence different perspectives and activities of mobile and stationary RVers comparatively (Ayers Counts & Counts, 2001).

Space may not be the only factor impacting food security and household livelihood security in existing small-space homes. Research has long correlated income levels to household food security (Floro & Swain, 2013; Nord, 2007; Stang & Kossover, 2005), just as research shows that retirement age is often accompanied by decreased income levels (Munnell & Sass, 2008; Schulz & Binstock, 2006) and decreased food security (Harris, Neyman, & Silliman, 2004). Many studies also indicate that food security can be linked primarily to other household variables including housing type and neighborhood demographics (Drewnowski, 2009; Navarro, 2010; Olson, Bove, & Miller, 2007). These household variables are important and known to play key roles in food access, household food patterns, and healthfulness – all components of food security (Tucker-Seeley, Harley, et al., 2013; Richards & Smith, 2006). Given the above, housing and kitchen space would seem to be logically connected to other factors that relate to household food security. Only a few studies have addressed how food choices can be impacted by inadequate storage space. One study provides evidence of the relationship between food storage space and food security in an urban homeless shelter for low-income individuals (Richards & Smith, 2006). In addition to limited finances and limited food access, limited spaces for food storage lead to different food purchasing and eating patterns (Richards & Smith 2006; Hoisington, Schultz, & Butkus, 2002). Limited storage capacities add to the smaller-packaging/higher-grocery-cost concern and further contribute to limitations in food choices, particularly with fresh foods (Richards & Smith, 2006).

Where space limitations of the RV relate to lifestyle adjustments, we can assume that limited spaces may also have some bearing on food strategies that work to ensure

household food security. To compensate for common cash shortages in relationship to food budgeting patterns, research shows that low-income households seek affordable food procurement strategies that include big-box-store shopping, bulk shopping, and large-quantity discount shopping (Dammann & Smith, 2010; Webber, Sobal, & Dollahite, 2010). However, adequate storage space is a clear necessity for larger packaging and stocking up on food supplies, and the RV offers very little space when compared to other U.S. standard homes (Ayers Counts & Counts, 2001; Williams, 1995).

In addition to food shopping strategies, a food coping strategy that can be used by low-income families is alternative food procurement (Kortright & Wakefield, 2011; Vaughan & Vitousek, 2013). Alternative food procurement can include hunting, fishing, gathering, gardening, and canning. The importance of game wildlife and fishing as a possible food source for the poor cannot be overlooked (Reimer, 2006; U.S. Fish & Wildlife Service, 2011; Vaughan & Vitousek, 2013). Yet, reliance on any of these alternative food procurement strategies calls for refrigeration or freezing, as well as cupboard or pantry space for canning. Low income RV dwellers are likely to find themselves not only short on cash, but short on required food storage space, meaning they must develop other food coping strategies for RV living.

The Theory of Home and Cultural Capital

Given that some RV dwellers identify as “full-timers” when they choose to travel long-term in their RVs (Bruzenak & Zyetz, 2012; Jones, 2011), while others identify as “full-timers” due to a more circumstantial nature of living in an RV as a lower-cost primary housing option, it would be erroneous to categorize or define all RV dwellers singularly. Just as we expect that mobile and stationary RV dwellers are likely to

demonstrate different income levels and different reasons for choosing the RV as an extended-period dwelling, these two distinguishable RV groups may also demonstrate disparate food strategies and perhaps different perceptions of their RV space environments. The recognition of what is adequate in terms of housing and kitchen space is likely to be different than for those determining what is adequate for travel. Housing space assessments and kitchen utilization in RVs might also be influenced by social status and cultural expectations of those using RVs as long-term dwellings. This can be understood when applying Shin's (2014) Theoretical Model of Home. Shin explains that the concept of home is dependent not only upon the geographical elasticity of the home with relationship to one's earthly location, neighborhood, and housing type, but also upon the individual's nested position within a social setting. Drawing from Canter's theory (1991), Shin provides a transactional theoretical model of home, pairing the "rules of place" and "cognitive ecology." This allows for an understanding of the home as an environment that follows socially expected behaviors within the setting (Shin, 2014, pp. 80-84).

Adapting Shin's (2014) theoretical model so it can be applied to the RV home, RVs can be understood as more of an environment that influences behavior and perceptions than simply a place of shelter. The RV home, when viewed in accordance with Shin's theory, can be partly defined as a "general human condition" or "ideology," pertaining to individual and group social and cultural expectations of the home, the home's representative space, the individual, and the actions of the individual within that space (Shin, 2014, pp. 80-84). With smaller spaces than what we typically find in U.S. housing, the RV is identified by the dominant middle-class as an inadequate living space.

Shin's theory is supported by Bordieu's (1984) theories on cultural capital and class distinction. In consideration of RVing and housing, the group that sets living standards is the group to which these rules generally pertain (Bourdieu, 1984). RVs are made for leisure travel and are marketed to and purchased new by predominantly middle-class mobile RVers to fit a distinctly mobile RV lifestyle. Mobile RVers comply with their own cultural expectations for the RV and improve or maintain their status and cultural capital by doing so. These mobile RVers are not likely to view RV spaces as limiting when using the RV for its intended purposes. However, stationary RVers with financial constraints will not only recognize the dominant cultural standards they are unable to comply with, but will also readily acknowledge that they lack certain features of standard household living deemed necessary and adequate by others.

Therefore, definitions of what is adequate or limited in housing space can be partially defined by physical measurements of housing spaces, but must also be defined by users themselves within the context of their position in society and their perceived necessities within the home. This theory enables us to understand how the RV has come to be viewed as an instrument for socially acceptable leisure activity among mobile RVers while it is simultaneously marginalized as a substandard, less-than-preferential housing option for stationary RV dwellers. These theories further allow us to compare and explain intergroup disparities and agreements in relationship to housing and kitchen space perceptions and food patterns demonstrated in both full-time stationary and mobile RV households.

Materials and Methodology

Study Area Description

Eight long-term and four short-term RV and trailer parks in Oregon were chosen for the research. Long-term RV and trailer parks were defined as parks that provided parking pads, electrical, sewage, and water hook-ups, and sometimes cable and internet services. The term “long-term” corresponded specifically with trailer parks and camps that had no maximum-stay rule. Long-term parks were also more likely to accommodate stationary RV households. Long-term parks were selected from Albany, Bend, Corvallis, Eugene, Gresham, McMinnville, Salem, and Troutdale. All long-term parks were located in suburban and urban areas due to their overall similarities and close proximities (each within two miles) to town services and standard grocers.

All long-term parks were located in towns or cities with at least minimal public transportation services (bus systems). A number of the major grocery stores nearest to long-term parks had accompanying fuel stations and offered fuel discounts based on grocery purchases. Each long-term park was located at least one to five miles to the nearest small restaurants and fast-food chains, 24-hour convenience stores, primary and secondary schools, lawn supply and gardening stores, hospitals and clinics, tire shops, parts stores, and auto mechanic services. Only Troutdale had a nearby (within five miles) RV repair shop. Long-term parks in Albany, Corvallis, Eugene, and Salem all offered space beyond the paid RV parking pad for personal or community gardening. None of the long-term or short-term parks offered extra refrigeration or food storage lockers.

Short-term parks allowed a maximum of two weeks stay, forcing necessary mobility among these RV park visitors. Short-term parks were selected from Corvallis,

the Columbia River Gorge, and from Brookings, Oregon. Similar to long-term parks, short-term parks provided electrical and water hookups, but sometimes did not have sewage services provided at the RV sites, thereby also limiting long-term stays. Park-provided cable and internet services were not available at any of the short-term parks. In order to produce similar sample numbers for both groups, fewer short-term parks were selected. This was due to the anticipation that a greater turnover of mobile RVers would exist in short-term parks. Short-term parks did provide a greater participant sample pool in a shorter period of time than long-term parks. Two short-term parks were selected with features similar to those of long-term parks, while two other short-term parks were more than five miles but less than ten miles to the nearest community services and public transportation.

Recruitment and Survey Sample

In order to gather only full-time mobile RV households from short-term parks, recruitment materials were posted at park information and registration kiosks along with surveys. Recruitment materials requested participation specifically from RV dwellers living for six or more months while traveling in their RVs. Full-time mobile RVers were therefore defined as RVers who used RVs for six months at a time while maintaining regular travel. Recruitment of stationary RV dwellers was conducted by speaking with park managers and posting recruitment materials in all of the chosen park offices and laundry facilities. Recruitment materials stated that stationary RV dwellers were required to have lived in an RV for a period of at least six months within the park. Stationary RV dwellers were defined as those who seldom (if ever) traveled in their RVs, while living in the RV for an extended period, often beyond six months at a time. Nine hundred and fifty

surveys and return envelopes were distributed at all combined parks from June through September, 2013. Participation was voluntary and anonymous. 198 total respondents returned completed surveys, representing 95 stationary RV households and 103 mobile RV households.

Survey Tool

The survey contained questions on basic demographic information such as age, sex, household income levels, number of household members, and employment status. Another set of questions inquired about RV ages, RV lengths, number of slide-outs, and duration of RV living. The last set of questions asked about food preparation and storage space, food acquisition, and household food security. Food security questions were asked based on the Guide to Measuring Household Food Security and the Food Security Core-Module Questionnaire (USDA, 2000, p. 22). Participants were asked to check one of four statements that related to their household food conditions: 1) We have enough to eat and the kinds of food we want (food security); 2) We have enough to eat but not always the kinds of food we want (mild food insecurity); 3) We sometimes do not have enough to eat (moderate food insecurity); and 4) We often do not have enough to eat (extreme food insecurity). In addition, we asked about food space in the RV kitchen as it pertained to components of food utilization. Food utilization questions related to whether RV dwellers felt that their pantries or cupboards were adequate for food storage, whether refrigerators met their food storage needs, and whether counter tops, table spaces, and sinks were adequate for food preparation, consumption and clean-up. These were yes and no questions with additional lines provided for explanations of answers. A subset questionnaire asked RV dwellers if they used additional alternative spaces of any kind for

food storage, eating, or food preparation, including purchasing outdoor refrigeration, using spaces not designed or intended for food storage, such as closets or bathroom cupboards. Each question provided additional lines for participants to describe such alternative methods of food utilization.

Focusing on low-income RV households at the beginning of this study, we asked occupants to state their yearly income levels by checking one of five ranged values within the lower-income bracket determined by HUD (2013), or between \$0 and \$35,000 per year. An additional income bracket above the low-income marker was provided. Rather than asking participants for exact income values, this method was used to ensure greater reliability on income-level answers (Bernard, 2011). This method of collecting income data did limit interpretation of possible income-based food insecurity for those above the low-income bracket living in RVs. The median yearly income level in Oregon was \$45,010 in 2013; so 50% of the median was \$22,505 for a single-person household (U.S. Census Bureau, 2013). Based on U.S. Census Bureau (2013) income level indicators, income levels for both stationary and mobile RV households were calculated from yearly incomes and the number of occupants per household. RV dwellers' employment status, listed as employed part-time, full-time, or volunteer, and unemployed, disabled, retired, or other, was also gathered to provide a basis for interpreting information on household conditions and income levels between mobile and stationary RV groups.

The survey asked if RV dwellers used specific budgeting and food strategies such as SNAP and food banks, coupons, bulk purchases, food-cost-sharing, receiving food from family or friends, hunting, fishing, gardening, and fuel savings. These questions allowed participants to choose all that applied. Additional lines were provided on the

survey for indicating other strategies. We also asked which grocers were used most commonly and asked participants to give reasons for their choice of grocers. Participants were asked how many meals they ate that were prepared outside the RV during the week prior and how many meals they skipped during that week.

Each survey answer was given a numerically coded value for SPSS analysis. The most frequent strategies were listed and tallied for each group, and some were categorized and combined, such as food bank and SNAP use, and alternative food procurement strategies (hunting, fishing, gardening, gathering, canning). Food security levels were ranked as four values from extreme food insecurity to food security, and the Kitchen Adequacy Score combined all kitchen space assessments into a scaled accumulative code. Each positively assessed kitchen space received a value of 1, where spaces assessed as inadequate received a value of zero. SPSS was used for statistical analysis.

Results and Discussion

Descriptive Analysis

The data analysis with descriptive statistics showed a number of differences and few similarities between mobile and stationary RVers. One similarity between both stationary and mobile RV households is that they averaged essentially two occupants per household (both groups averaged 1.9 members). Another was that RV sizes and number of slide-outs (extendable rooms from within the RV) were generally the same for both groups. A comparison of mobile and stationary RVers is shown in Table 1.

Table 1. Comparison of Household Variables for Mobile and Stationary RV Dwellers.

RV household variable	Mobile RVers	Stationary RVers
Mean RV age	7.5 years	13.6 years
Mean months per year of RV living	8.1	11.3
Own other home or real estate	66.0%	17.9%
Mean number of meals skipped per week	0.3	3.1
Mean number of meals eaten out per week	0.87	2.0
Assesses the RV as adequate for living	98.0%	67.3%
Household lives in RV with less than APHA minimal space requirement for living	65.0%	57.9%
Indicates some level of household food insecurity (from mild to extreme)	6.8%	49.5%

As we began to assess RV groups in relationship to household incomes, of 95 stationary RVers surveyed, 64.2% (n=61) could be classified at lower income levels or below 50% of median yearly income levels in Oregon, and 23% (n=22) were classified at or near the poverty level, specified as below 30% of the median income level in Oregon (USDHHS, 2013). Comparatively, 35.9% (n=37) of mobile RVers could be classified at lower income levels. The number of low-income mobile RVers exceeded initial expectations; however, nearly all low-income mobile RVers were within 40-50% of the median income range, with only five mobile households of the 103 surveyed within 35-40% of the median.

As expected, the mobile RV population represented mainly retirees averaging 66.1 years of age. Mobile RVers were on average 11 years older than stationary RV dwellers who averaged 55.3 years of age. Ages of both groups coincided with the

literature on RV target marketing to retirees and common cultural perceptions of RVers in the U.S. Retirees made up 80.6% of full-time mobile RVers. Figure 4 shows age comparisons by overall sample percentages for the two RV group types.

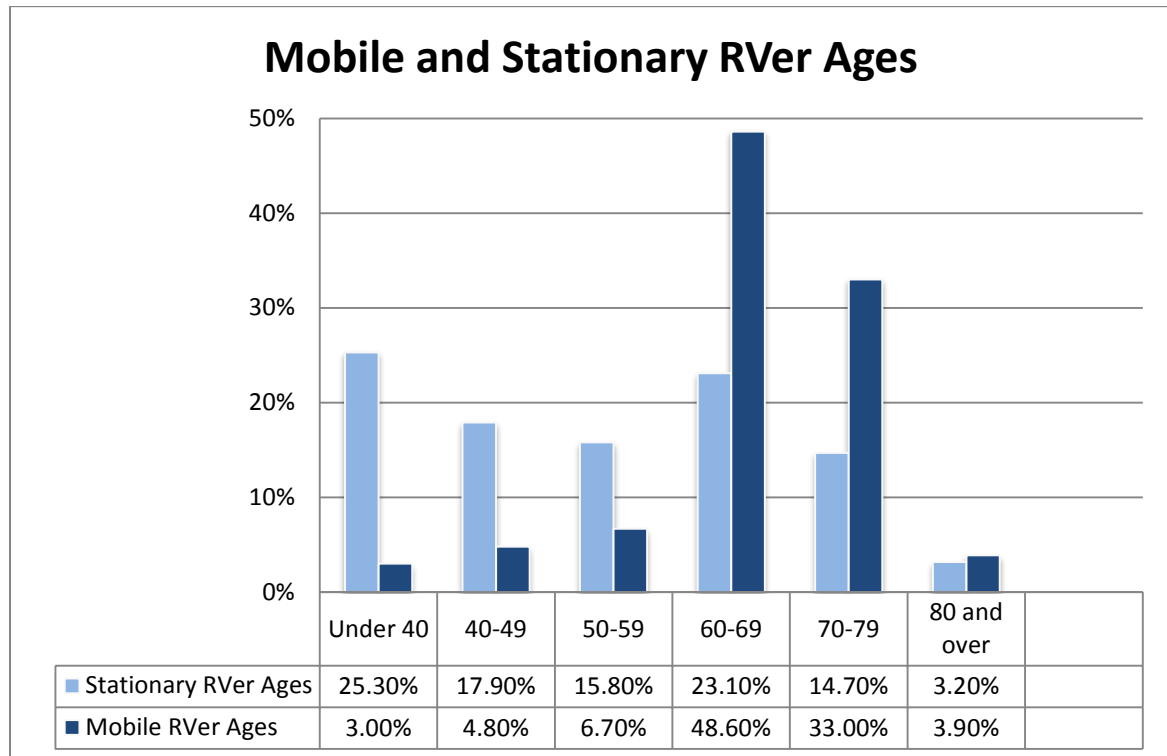


Figure 4. Age Comparisons for Mobile and Stationary RV Dwellers.

Correlations

A limitation in income levels conveyed by participants is that these numbers may have not accurately reflected other available financial savings, but reflected perhaps only the retirement status and related incomes for RV dwellers. This seems to be the case considering other primary home ownership and the high levels of retirement for the mobile RV group. To substantiate this, when we compare the mobile RVers to stationary RVers using Spearman's rho correlational analysis, at $p < .001$, we find a significant positive correlation between household income level and food security level for stationary RV households. Nearly half of all stationary RVers surveyed ($n=47/95$)

expressed some level of food insecurity from mild to extreme which correlated directly with income. This correlation was not significant for mobile RVers with expressed lower income levels, and none of the mobile RV dwellers represented poverty-level households.

To answer whether similarly small kitchen spaces were used and viewed similarly between mobile and stationary RV dwellers of different food security levels, the survey asked both full-time RV groups to assess their kitchen spaces in accordance with food storage, preparation, consumption, and clean-up. Food storage required refrigerator and pantry or cupboard space. Hygiene and clean-up required kitchen sink space. Food preparation required counter space, and food consumption required table space. Though overall calculated interior square footage was not significantly different between the two groups, stationary and mobile RVers gave far disparate adequacy assessments of their refrigerators, counters, cupboards, sinks, and table spaces. Figure 5 shows this assessment comparison.

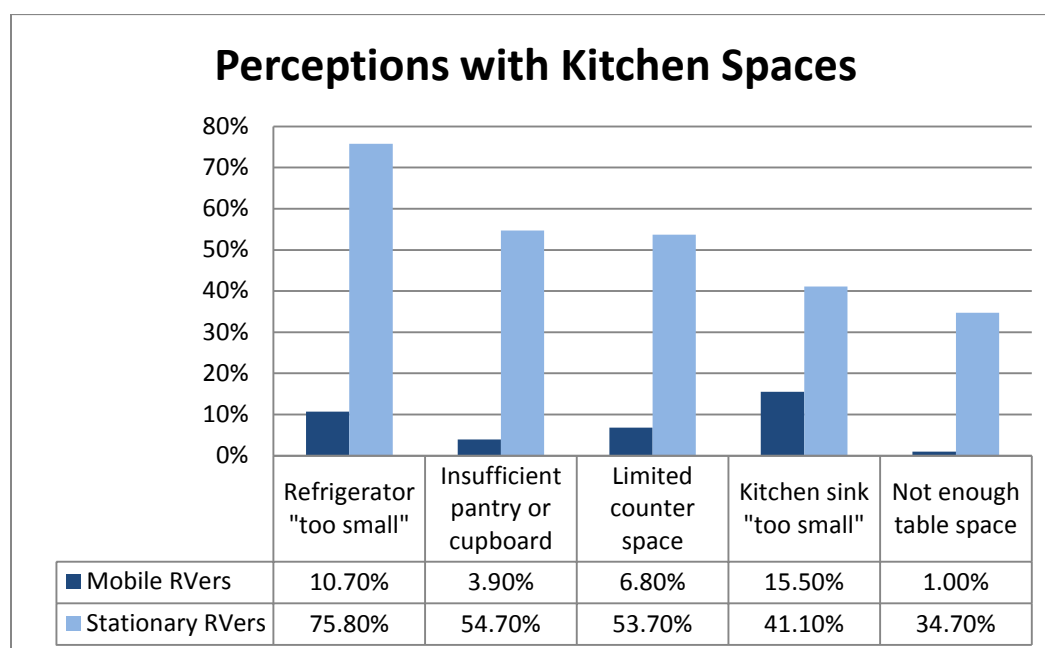


Figure 5. Comparison of Mobile and Stationary Kitchen Space Assessments.

RV overall interior square-footage measured positively significant to food security levels for both groups, meaning that the smaller the RV, the more likely its inhabitants were to experience some level of food insecurity. However, with overall interior RV square footage calculated as similar between the two groups, an even greater relationship was found to exist between RV dwellers' personal assessments of specific kitchen spaces and their levels of food security.

Given that full-time mobile RVers generally found kitchen spaces in the RV to be adequate for their food needs while stationary RVers did not, we looked for statistical correlations between these assessments and food security in both RV household types. To test RV kitchen space limitations and food insecurity levels for statistical significance, a scale was used to develop a kitchen adequacy score corresponding with participants' five kitchen space assessments that were related to food utilization. Scores ranged from 0 to 5. Participants that answered negatively to all five kitchen space assessments received the lowest kitchen adequacy score of 0, while participants that answered positively to all kitchen space assessments received the highest kitchen adequacy score of 5. A one-way between-subjects ANOVA was conducted on the kitchen adequacy score and food security. This revealed a statistically significant effect of RV group type for kitchen adequacy ($F(1,196) = 148.333, p < .005$). There was also a statistically significant effect of RV group type for food security ($F(1,196) = 59.748, p < .005$). Using a two-tailed Spearman's rho analysis for ranked correlations in both mobile and stationary RV households, we tested mobile and stationary RVers together and separately in search of RV household correlations to food security levels. This revealed that at $p < .01$, there is a statistically significant correlation between both mobile and stationary RV dwellers'

kitchen space assessments (as indicated by kitchen adequacy scores) and RV household food security. Table 2 shows statistically significant correlations.

Table 2. Food Security Correlations for Mobile and Stationary RV Dwellers.

		Food Security Levels for Mobile and Stationary RVers (N=198)	Food Security Levels for Mobile RVers (n=103)	Food Security Levels for Stationary RVers (n=95)
RV Dweller Age	Correlation Coefficient	.341**	-.014	.210**
	Significance	.000	.891	.042
RV Household Income Level	Correlation Coefficient	.443**	.360**	.332**
	Significance	.000	.000	.001
Months per Year of RV Living	Correlation Coefficient	-.318**	-.052	-.124
	Significance	.000	.601	.231
RV Age	Correlation Coefficient	-.397**	-.223***	-.308**
	Significance	.000	.024	.002
RV Size - Interior Square Footage	Correlation Coefficient	.223**	.331**	.287**
	Significance	.002	.001	.005
Kitchen Space Assessments - Adequacy Score	Correlation Coefficient	.558**	.543**	.379**
	Significance	.000	.000	.000

** Correlation is significant at the 0.01 level (2-tailed).

***Correlation is significant at the 0.05 level (2-tailed).

Income levels, RV age, and RV size were significantly correlated to food security levels in both mobile and stationary RV households when considered as separate groups and when considered together. We found a negatively significant correlation related to months per year of RV living and food security when both mobile and stationary RV households were considered together, but not for either group individually. RV dweller age was only statistically significant in relation to food security in stationary RV households and when tested for RV groups combined. The indication here is that older

stationary RV dwellers are more likely to be food secure than younger stationary RV dwellers. This did not coincide with existing studies that indicated greater food insecurity among older populations. However, when paired with RV small-space living, at $p < .005$, RV dweller age was positively correlated to interior space and income, and negatively correlated to RV age and months per year of RV living. This means that the older the RVer, the more likely he or she is to have a greater income and a larger RV that is both newer and more spacious. In turn, this RVer spends less time per year in the RV and has a lower occurrence of food insecurity.

Figure 6 shows how mobile and stationary RV groups that were both food secure and food insecure utilized food strategies in measurably different ways. As anticipated, food insecure RV households were more likely to utilize SNAP or food banks. When breaking this down further, extremely food insecure households among stationary RVers utilized this option most. At least 60% of both mobile and stationary RVers used money saving and budgeting strategies, such as coupon and sale food purchases, and took advantage of fuel discounts where offered at nearby grocers. Yet, food insecure households of both mobile and stationary groups used more of the money saving strategies. Mobile RVers that were food secure were more likely to utilize alternative food procurement strategies such as hunting and fishing, but less likely to utilize gardening when compared to stationary RVers. This produced a lower percentage of mobile RVers using alternative food procurement strategies overall in comparison to stationary households (Figure 6).

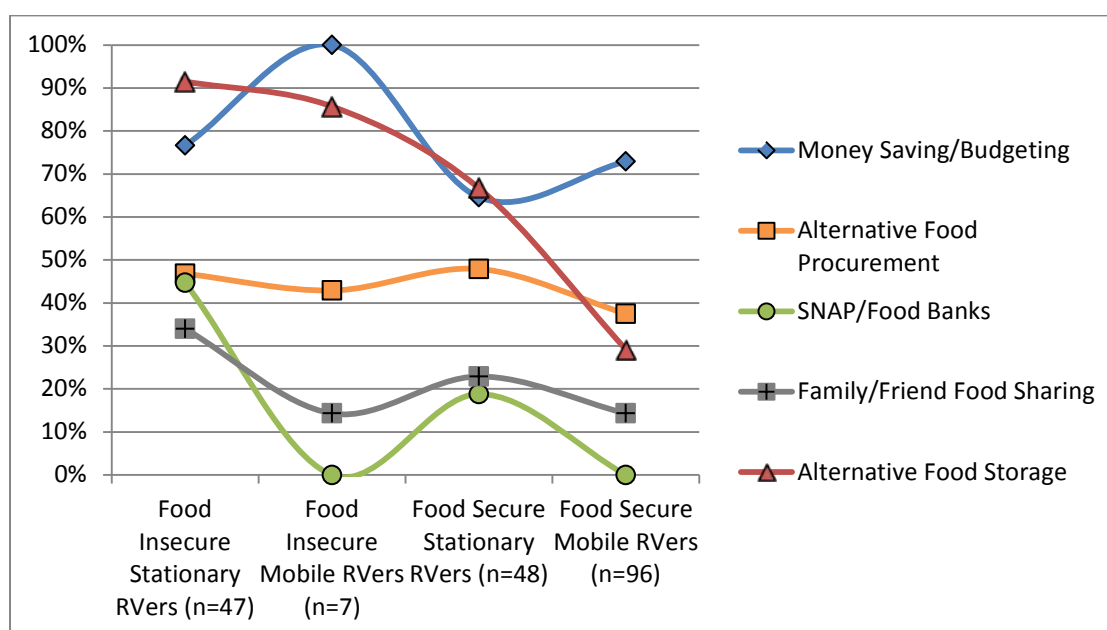


Figure 6. Food Strategy Usage by RV Household Food Security Levels.

Among the alternative food storage strategies, both mobile and stationary groups utilized alternative food storage by taking advantage of RV cupboards and spaces not designed or intended for food storage both inside and outside the RV. Using added refrigerators and freezers outside the RV was a commonly used strategy for extra food storage for both groups. The large numbers of stationary and food insecure RVers employing alternative storage methods in contrast to mobile RVers likely indicated a relationship to space assessments of the kitchen and related food purchasing patterns and lifestyles for both groups. Stationary RVers, for example, stated that they attempted to make purchased food last on average one to two weeks, while mobile RVers bought food for a period of four days on average. Stationary RVers further expressed financial savings as the primary reason for choosing their specific store, while mobile RVers chose stores more for their close proximity to the RV park.

Conclusion

This research found differences in RV dwellers' ages, household income levels, and RV ages among mobile and stationary RV group types. RV sizes were similar for both groups, leading to further exploration of food strategies, and kitchen space assessments in RVs being used for extended travel or as primary homes. Food strategies and food security levels were markedly different for full-time mobile and stationary RV dwellers. In relation to food utilization measures associated with food storage, preparation, consumption, and clean-up, mobile and stationary RV dwellers gave different assessments of their kitchen spaces. Strong statistical correlations were found to exist between RV ages, income levels, and RV sizes and in relationship to food security. RV dweller age also played an important role in RV household food security among stationary RV households. Although the APHA standard had little to no bearing on food security, RV overall interior size and kitchen space assessments did. RV dwellers' kitchen space assessments and kitchen adequacy scores had the highest levels of significance to RV household food security levels.

It might be argued that some of differences between the spatial assessments of mobile and stationary RVers may have been partially due to different RV designs, RV ages, and organization of spaces within various RVs. However, such a drastic disparity between groups when RV spaces and numbers of slide-outs were otherwise similar is likely to be attributed to other factors. As supported by Shin's (2014) and Bourdieu's (1984) theories, these factors can be related to different income levels, financial limitations, cultural expectations of RVers, social status and class, needed RV repairs, and personal perceptions of kitchen spaces in relationship to household or travel needs. In

addition, where the RV is considered a vehicle for travel, comparisons of RV kitchen spaces are likely being made to other travel options in the U.S. In such cases, the RV for mobile RVers, with its own kitchen, bed, bathroom, living, and dining spaces, serves as an optimal leisure home away from home. On the other hand, the RV for stationary RVers is not likely being compared to travel options. More often serving as a primary home, household space comparisons are more likely being made to U.S. housing standards where kitchens and their storage and appliances are typically much larger.

Among other strategies demonstrated by RV households in this study, the measure of family and friend food sharing may have been the most limited by its definition and interpretation by participants. As expected, this strategy was very commonly expressed by food insecure stationary RV households, yet it was far less common for all other groups. A seeming limitation to this assessment was that survey respondents may have viewed this as a food procurement strategy alone in which they felt they were being asked whether or not they received food from family or friends. Rather, we had asked and hoped to gauge whether food was being commonly shared between fellow RVers or family members with reciprocal giving and receiving of food. The reason this assessment was viewed as perhaps somewhat limited is that other studies indicated frequent food sharing among mobile RVers (Ayers Counts & Counts, 1992; 2001; Williams, 1995). This food strategy was also witnessed regularly and used on a weekly basis by the researcher when living among mobile RVers from 2010 through 2012.

In terms of overall kitchen adequacy, mobile RVers found their RVs well suited for food utilization. With higher income levels and cultural support of the mobile RV

lifestyle in the U.S., it was apparent that individuals and couples living in RV spaces determined too small to comply with APHA standards for living, suffered few to no negative impacts related to food security and food utilization. The popularity of the mobile full-time RV lifestyle as a subcultural phenomenon for the middle class, its promise of social activity, leisure enjoyment of retirement, along with the common ability of mobile RVers to return to other primary site-built homes likely helped to alleviate any impositions limited kitchen space might have had on them. Where these factors were not at play, we found those with limited incomes living in more stationary RVs expressing overall dissatisfaction with RV kitchen spaces and suffering from both limited incomes and more significant food insecurity levels.

Even when RV spaces were found to be measurably similar between full-time mobile and stationary RVers, mobile RVers assessed kitchen spaces and food utilization functionalities more positively. Mobile RVers found food strategies employed by stationary RVers less necessary while more disposable incomes likely allowed them to travel more often to grocery stores to stock up for just a few days at a time with desirable foods. They therefore demonstrated food security, expressing that they regularly had enough of the kinds of food they wanted to eat.

Stationary RVers were substantially more put upon by their RV lifestyles. In addition to having more limited incomes, more needed repairs, associated social marginalization, and an inability to stock up on food as desired, stationary RVers commonly found their kitchens inadequate in many ways for long-term living. This group attempted to adjust accordingly, seeking alternative storage strategies more often than their mobile RVing counterparts, while utilizing a number of available food procurement

strategies to better ensure food security. They demonstrated higher levels of food insecurity and expressed greater levels of discomfort from RV living.

We believe the results of this research can be useful in small-space housing design and development for limited-income families and for aging populations. This study may also serve as a guideline for small-space housing providers or shelters looking for ways to ensure greater food security for lower-income households. By providing additional storage or food lockers at trailer parks as well as gardening spaces, many RV dwellers experiencing space and financial constraints may be able to cross the threshold from moderate and mild levels of food insecurity to food security.

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Chapter 4: Conclusion

Stationary RV households were shown to be more commonly beset by higher levels of food insecurity than mobile RV households. Additionally, mobile and stationary RV groups demonstrated disparate food strategies and assessments of their RV living spaces. Incomes and ages for mobile RV dwellers were higher on average than for stationary RVers, and both of these factors coincided with greater food security for mobile RVers. Beyond showing just income and food security relationships, this research showed that the limited spaces of RVs exacerbate food insecurity, especially for stationary RVers, by limiting a household's ability to carry out proper food utilization in the kitchen. Limited space also contributed to mild food insecurity among mobile RVers. Yet, even when RV sizes were similar for both stationary and mobile RVers, stationary RVers were more likely to express kitchen inadequacy in kitchen spaces related to food utilization. Stationary RV dwellers therefore demonstrated much lower kitchen adequacy scores than mobile RV dwellers.

Limitations in housing for stationary RVers were determined partially by physical limitations of space based on U.S. housing codes. In terms of measurable physical space alone, RVs did not generally comply with U.S. housing standards and ordinances. However, the U.S. measure for adequate living space, set forth by APHA standards, had a less significant relationship to food security and kitchen space assessments than actual square footage. Space limitations could also be defined by cultural expectations and manufacturing of the RV as a mobile and leisure travel vehicle. Theory on home and cultural capital was supported by the data which showed that when RVs are chosen for leisure travel and retirement activity, even when used for several months at a time,

mobile RVers comply with cultural expectations. In doing so, mobile RVers make the best of their small-space RVs, viewing their kitchen spaces as adequate for food utilization. The mobile RV is not likely to be compared by its users to adequate housing standards in the U.S. When viewed this way, the RV is an optimal vehicle for leisure retirement and social activity. The mobile RV therefore represents acquisition and maintenance of cultural capital that complies with middle-class standards.

When RVs are used as stationary dwellings, their occupants begin to move away from the U.S. cultural expectations that assert that RVs are meant for travel. Serving as the primary home, stationary RVs, which are typically older and in greater need of repairs, become symbols of lower-class living. In such cases, the RV, as a home, is not viewed as a suitable and preferential travel option, but is compared to other standard U.S. housing options. Following theories on home and cultural capital, the stationary RV often represents the low-income circumstances of its owners. As stationary RV dwellers fail to acquire or maintain cultural capital associated with the culturally accepted mobile RV lifestyle, they are more likely than mobile RVers to view their small dwelling spaces as limiting in a number of ways.

Influencing food strategies, assessments of living and kitchen space, and associated food security, the social marginalization and lower-class status of stationary RVers interacts with the physical measurable space limitations in the RV. Other factors that weigh on food security include RV dwellers' incomes and ages, their own comparisons to cultural standards in housing, and a number of other factors, including RV age, RV type, needed household repairs, employment status, and the number of months per year spent living in the RV. When considered together, these factors were

shown in this study to be significant in relationship to mobile and stationary RV dwellers' kitchen space assessments and food security levels.

To overcome some of the impositions created by social, space, and financial limitations, the most food insecure stationary RV dwellers relied on family and friend food sharing and alternative food storage, such as adding outdoor refrigerators or storing food in places not designed for food storage. To offset other income limitations, the most food insecure stationary RV households utilized regular budgeting strategies, shopped at big-box stores, and used SNAP and Food Bank benefits. Food insecure stationary RV households were unlikely to utilize the same alternative food procurement methods that food secure stationary and mobile RV households commonly employed such as gardening, hunting, and fishing. This was perhaps due to associated costs with these activities or other limiting factors such as know-how or being elderly and/or disabled.

Recognizing that RV dweller age, RV size, RV age, and income levels were the most significant factors associated with food security in the RV, we believe the results of this thesis and research can be useful in small-space housing development for limited-income and elderly persons and families. Further studies based on our data and future similar research may help to explain age-related food strategies in small-space households. This study may also serve as a guideline for small-space housing providers or shelters looking for ways to ensure greater food security for lower-income households. For example, gardening spaces and cold food storage or lockers could be provided in long-term parks to help offset limited finances and limited food storage thereby ensuring greater food security.

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