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Mobile homes are a ubiquitous site in the Southern rural landscape. In rural and suburban regions across the United States, mobile homes are often the best, or only, affordable housing option for low-income and working-class individuals and families. In the U.S., 20 million people live in manufactured housing, or about 6.5 percent of the total population. In North Carolina, this figure is much higher: 14 percent of residents live in manufactured homes (U.S. Census Bureau, 2015). The prevalence of manufactured housing reflects the financial and logistical challenges of site-built construction in rural areas that lack infrastructure. The high number of mobile homes also demonstrates the lack of other affordable housing options, like multi-family residences that are common in urban areas. Approximately 12 percent of all mobile homes in the U.S. are vacant or abandoned. While no data is kept specifically for North Carolina, if this percentage holds true, that would equate to approximately 75,000 vacant or abandoned mobile homes across the state. The cost of removing and disposing of an abandoned unit can be upwards of \$10,000 and it could cost approximately \$750 million to remove all the existing abandoned or vacant mobile homes.

ReMobile Home uses a mixed method approach to examine whether rehabilitating older, vacant, or abandoned mobile homes is a viable way to

increase affordable housing options in rural North Carolina. This thesis consists of a proposed redesign of a 1974 mobile home as well a Photovoice project. Photovoice uses photographs to capture aspects of an individual's daily experience and share them with others. Individuals take their own pictures about a subject or question, and then describe their photo in either written or oral form. Participants in my project are asked the question "What makes your mobile home feel like home?" This method allows mobile home dwellers to be the experts and helps dispel some of the stigma and stereotypes about mobile homes and who lives in them. The thesis examines the complex problems and issues surrounding rehabilitating older mobile homes and seeks a better understanding of what it means to call a mobile home, 'home.'

REMOBILE HOME: AN EXPLORATION OF MOBILE HOMES  
IN RURAL NORTH CAROLINA

by

Emily-Kate Hannapel

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Approved by

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Committee Chair

To my community of friends and family. Thank you for sharing ideas and meals;  
for countless walks and a steady stream of support over these years.

To my parents, Teresa Smith and Tim Hannapel. Thank you for supporting me  
wherever my path takes me (and being excited about it too!).

And to all the people who shared their stories, their photographs, and knowledge  
with me. Thank you for trusting me with them.

APPROVAL PAGE

This thesis written by Emily-Kate Hannapel has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

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## PREFACE

It's challenging to put words to why home is so important to us as humans, and what home feels like. It's easier to put words to what happens when it's gone. A move, whether forced or by choice, is rightly described as a loss.

Shortly after I started graduate school, I left a home that I loved dearly. I broke up with a long-time partner and sold the home that we had shared. The house was so important to me. It was where I planted my first garden. Where I hosted dinner parties around the first table I built. It felt like a stable and sturdy place to move out into the community from. When I look back it is hard for me to separate the loss of this home to the loss of the relationship. For the first time in my life, the line between having a home and not, felt permeable.

While trying to get back on my feet, I moved from Downtown Durham to a farm in rural Person County. I moved from a historic mill house to a 12x12' tiny house without indoor plumbing or heat. My commute from Person County to UNC-Greensboro was entirely different. Hell, everything about my landscape was different.

As I started to understand the rural landscape in the Piedmont, I began to notice how prolific mobile homes were. I also began to study affordable housing at school. In studying affordable housing, two topics were often left out of the

conversation: rural affordable housing and the importance of home. You can't study rural affordable housing without studying mobile homes; however, mobile homes were never mentioned. About a fifth of our population lives in rural areas-- it's important that they too have a seat at the table. To me, any conversation about affordable housing should be grounded in home and how we connect to home. When we discuss numbers and statistics, it is important to remember that each statistic is a real person, and that each person without a home feels that loss, that absence.

This thesis studies both of these topics. It stems from the personal and moves into academic research and policy. This thesis is my attempt to understand what home means to different people, and what it means when that home is designed to be mobile. It is my goal to add more voices to the affordable housing conversation. Thank you for reading.



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## CHAPTER I

### INTRODUCTION

The home is the wellspring of personhood. It is where our identity takes root and blossoms, whereas children, we imagine, play, and question, and as adolescents, we retreat and try. As we grow older we hope to settle into a place to raise a family or pursue work. When we try to understand ourselves, we often begin by considering the kind of home in which we were raised. In languages spoken all over the world, the word for 'home' encompasses not just shelter but warmth, safety, family-- the womb....The home remains the primary basis of life. It is where meals are shared, quiet habits formed, dreams confessed, traditions created.

Matthew Desmond, *Evicted*, 293

Mobile homes are a ubiquitous site in the Southern rural landscape. Low and rectangular, they often appear in stark contrast to their surroundings. In many communities, the farmhouses, shacks, and cabins of the past, have been replaced by the mobile home. Yet the variety in mobile homes is striking: mobile homes with vegetable gardens in the front yard, mobile homes with large screen porch additions, mobile homes that are clearly abandoned, slowly sinking into the ground.

In suburban and rural landscapes across the U.S., manufactured housing is often the best, or only, affordable housing option for low-income and working-class individuals and families. Across the U.S., there are 20 million people who live in manufactured housing, or about 6.5 percent of the total population.

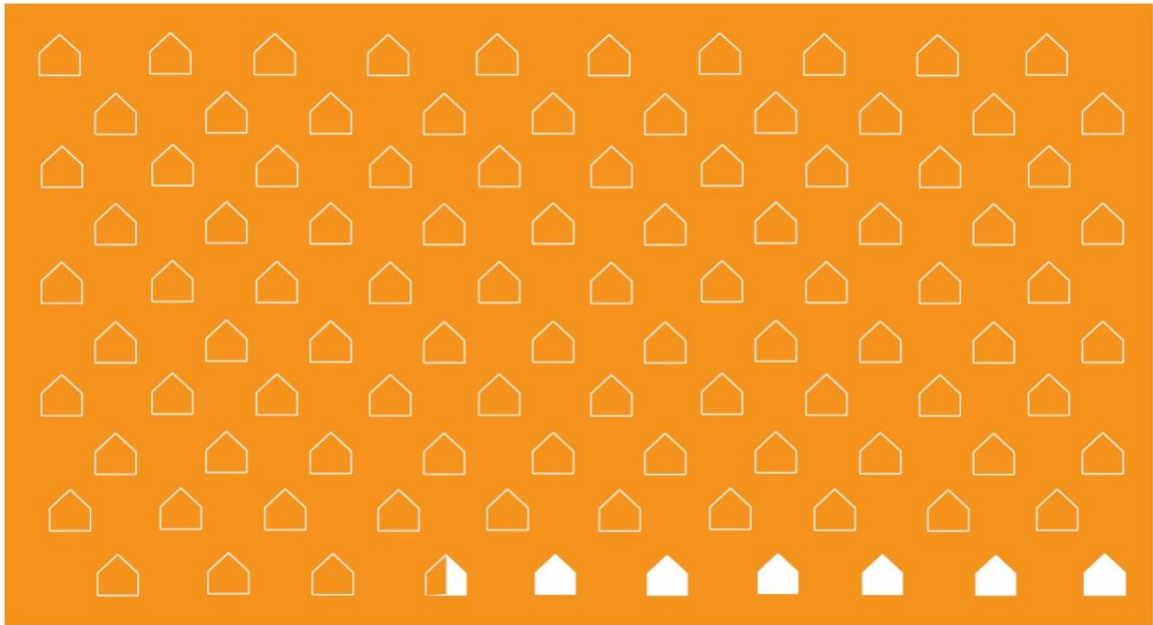


Figure 1. White Houses Represent the Number of Total Mobile Homes in the U.S., About 6.5 Percent.

In North Carolina, this figure is much higher: 14 percent of residents live in manufactured homes (U.S. Census Bureau, 2015). More North Carolinians live in mobile homes than in any other state besides South Carolina. The prevalence of manufactured housing reflects the financial and logistical challenges of site-built construction in rural areas that lack infrastructure. The high number of mobile homes also demonstrates the lack of other affordable housing options, like multi-family residences that are common in urban areas. Nationally, manufactured housing is growing most rapidly in the South and this region contains 55 percent of the country's manufactured housing. This is due to the significant population of retirees, immigrants, and lower-income families (Apgar, Calder, Collins, & Duda, 2002).

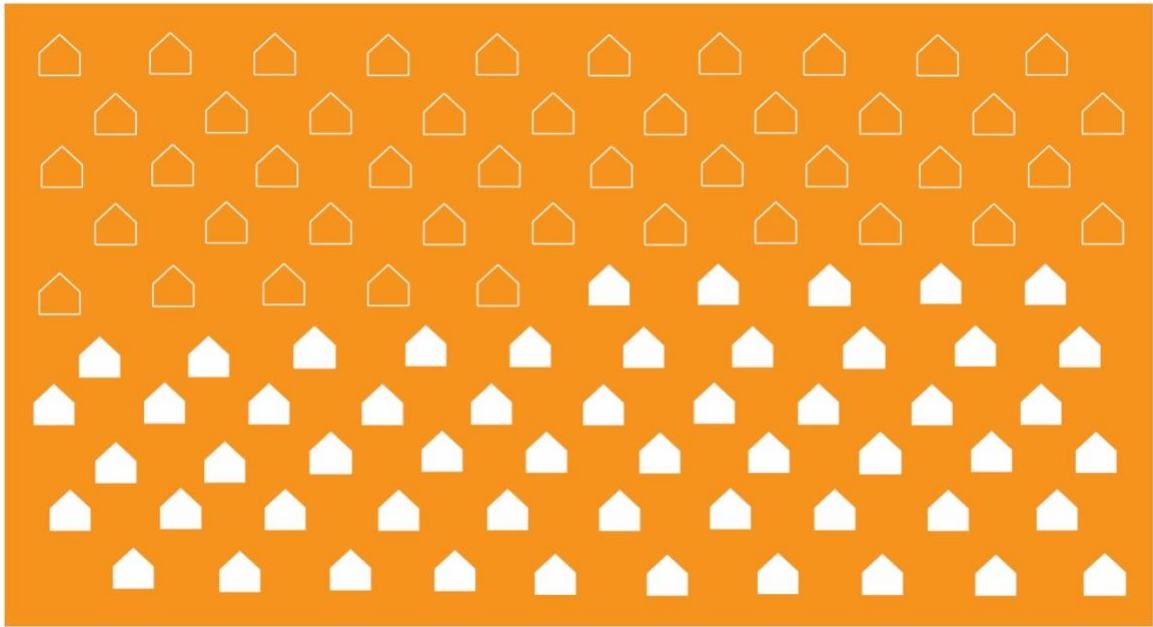


Figure 2. White Houses Represent the Percentage of Mobile Homes Located in the South.

In Orange County, North Carolina, where this thesis is focused, 7.9 percent of the housing stock consists of mobile homes. Slightly less than half of these mobile homes are located in one of the county's 100 mobile home parks. Orange County is considered to be "semi-rural," and is home to large towns like Chapel Hill and Hillsborough, as well as large areas of undeveloped countryside. The population of Orange County is approximately 150,000.

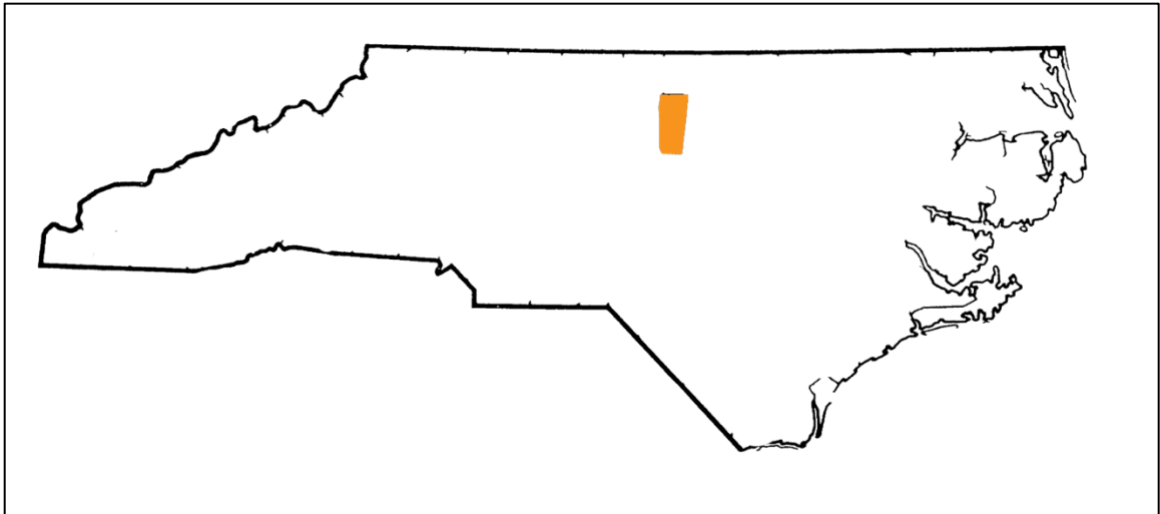


Figure 3. Orange County is Located in Central North Carolina.

As incomes and housing prices in Orange County continue to rise, the County is in the midst of a conversation about how to preserve and increase, affordable housing options for low and middle-income individuals (*2016-2020 Affordable housing strategic plan for Orange County, NC*). Mobile homes have been offered as one possible solution to increase affordable housing.

## Language and Definitions

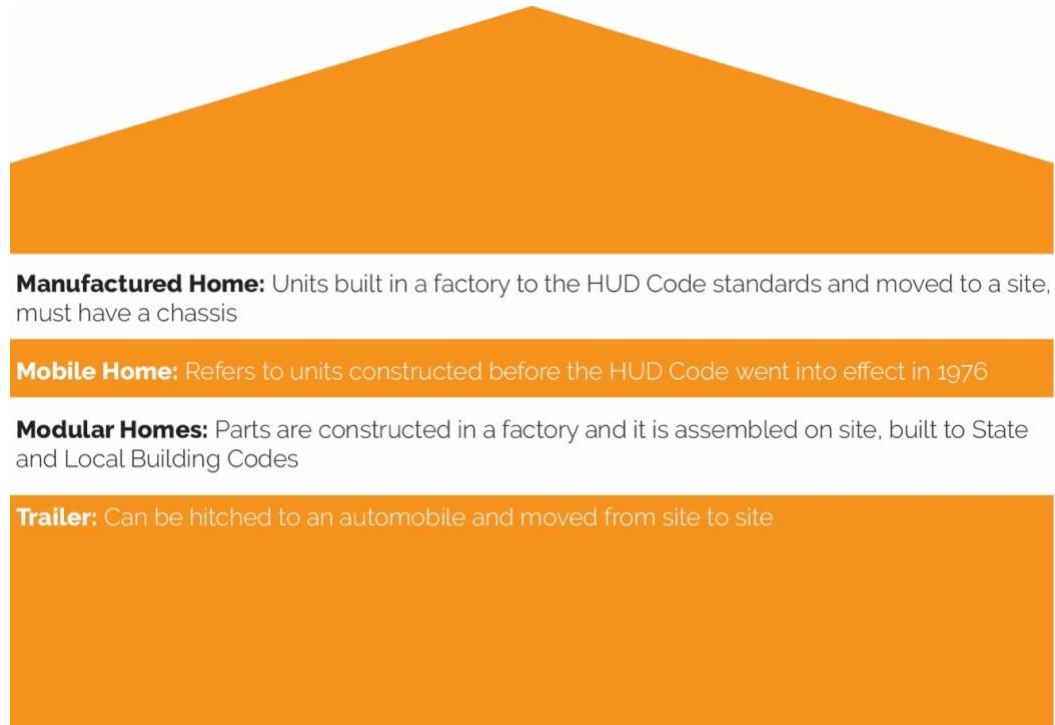


Figure 4. Definitions.

Typically, homes are primarily constructed in the place where they will be inhabited, and this is referred to as a “site-built” home. Manufactured homes are constructed off site in a factory and then moved to a site where they are connected to utility services (Apgar et. al, 2002). Manufactured homes are constructed on a steel frame foundation with chassis and wheels. This type of construction results in significantly lower costs, and in 2000, manufactured homes sold for approximately one-quarter of the price of site-built homes (Rust, 2007). In 1976, Congress passed the Federal Construction and Safety Standards Act which developed a building code for manufactured housing, referred to as the

Department of Housing and Urban Development (HUD) code. The code has since been expanded to include energy efficiency requirements. Mobile homes are defined as manufactured homes that were constructed before the HUD code went into effect, however the terms “manufactured” and “mobile” are often used interchangeably. “Trailer” is also often used to describe mobile or manufactured homes, though the technical definition involves a unit that has a hitch and can be easily moved. Modular homes are slightly different; parts are constructed in a factory and they are assembled on site.

Semantics are important in discussing manufactured housing and it is impossible to write about manufactured housing without including class and privilege in the conversation. Stereotypes about trailer parks, mobile homes, and mobile home dwellers grew increasingly prevalent during the 80’s and 90’s. Before this time, it was often considered patriotic to live in a mobile home and part of the American Dream. In her essay titled, “Immobile Dreams: How did trailers come to be a symbol of failure?”, Rachel Hartman writes, “The trailer park served as a metaphor, a cultural marker of class difference during a decade when Americans were more inclined to ascribe poverty to moral failings than to class-based inequities” (2011). She writes that by the late 20th century, trailers were the last resort for the uneducated, the underclass, and the unemployed. Stereotypes have persisted and indeed the term “trailer park” continues to conjure a different image than “neighborhood,” and “mobile home” a different image than “manufactured housing.”



Many scholarly articles use the term “manufactured housing,” and some dwellers make the case that using this term (rather than mobile home) provides an opportunity to rectify some of the stereotypes that surround manufactured housing. On her popular blog, “Mobile Home Living,” Crystal Adkins describes the difference in semantics and makes the case for the term “mobile home.” She writes, “You cannot change how people talk and you cannot change a product’s reputation by calling it a different name...I don’t care what you call it, I call it ‘home’” (Adkins, n.d.). I respect both of these arguments, however, my desire to speak in a common language takes precedence, and in this thesis I will use “manufactured housing” and “mobile homes” interchangeably. Additionally, individuals I spoke with used the words trailer, mobile home and modular home interchangeably. No one I spoke with used the term “manufactured home” to describe where they live.

The average sale price of a new mobile home is \$67,000 (U.S. Census Bureau, 2015). This price does not include set-up fees or land costs. A mobile home rehabilitation will be considered affordable if it is less expensive to acquire an abandoned or vacant mobile home and rehabilitate it than to purchase a new one at the average sale price.

## **Context**

New manufactured homes are constructed to meet the HUD Code that was originally established in 1976. In 2000 Congress enacted the Manufactured Housing Improvement Act, which provides guidance to HUD on creating a streamlined process for updating their standards (Schmitz, 2004). The majority of new manufactured homes are produced with central air conditioning and are three bedroom or larger (Apgar et. al, 2002). Larger home size is due to the availability of multi-section units (“doublewides”). Aesthetically, manufactured homes often appear similar to site-built homes and may have full drywall interiors, vaulted ceilings, and modern appliances. Manufactured homes are frequently indistinguishable from site-built homes. The efficiency of construction, both in terms of cost and materials, is impressive. In 2015, the cost per square foot to construct a manufactured home was \$48, compared to \$101 for site-built homes (“Facts about manufactured homes,” n.d.). The average sale price of a manufactured home is \$67,000 (U.S. Census Bureau, 2015), while the median sale price of all homes sold nationally was \$282,800 (U.S. Census Bureau, 2016). Additionally, manufactured homes are constructed in about one fifth the time and generate 35-40% less waste than comparable site-built homes.

Despite improvements in the industry, numerous social, environmental, and financial problems surrounding manufactured housing remain. While the HUD code introduced a clear set of standards, there continue to be concerns

about the safety and quality of manufactured homes. One report found defects or deficiencies in 90 percent of the 1,000 homes inspected in 12 different states (Rust, 2007). North Carolina is also one of fourteen states has not enacted comprehensive consumer protection law (Rust, 2007). Historically, cities passed zoning regulations that prohibited trailers inside city limits, relegating individual mobile homes, as well as mobile home parks, to the edges of cities and into rural areas. While there has been significant research on the mobile homes that are located in mobile home parks, there has been little done on mobile homes in rural areas, outside of parks.

In North Carolina, mobile homes are classified as personal property. They may be converted to real property if placed on a permanent foundation. The cost of placing a mobile home on a permanent foundation can range from \$6,000 to \$15,000 depending on the type of foundation built. Nationally, in 2013, 78 percent of manufactured homes were titled as personal property, rather than real estate (Semuels, 2014). This limits the tax incentives available to owners, creates financing difficulties, makes it difficult for units to appreciate in value, and in turn, makes it nearly impossible for owners to accumulate wealth. Most manufactured homes are financed through loans for personal property, with much higher interest rates. There are also fewer consumer protections for personal property loans, which makes it easier for homes to be repossessed when loan payments are not met.

Vacant or abandoned mobile homes pose their own complex set of problems. In 2015, 12 percent of all mobile homes nationally were vacant or abandoned (U.S. Census, 2015).

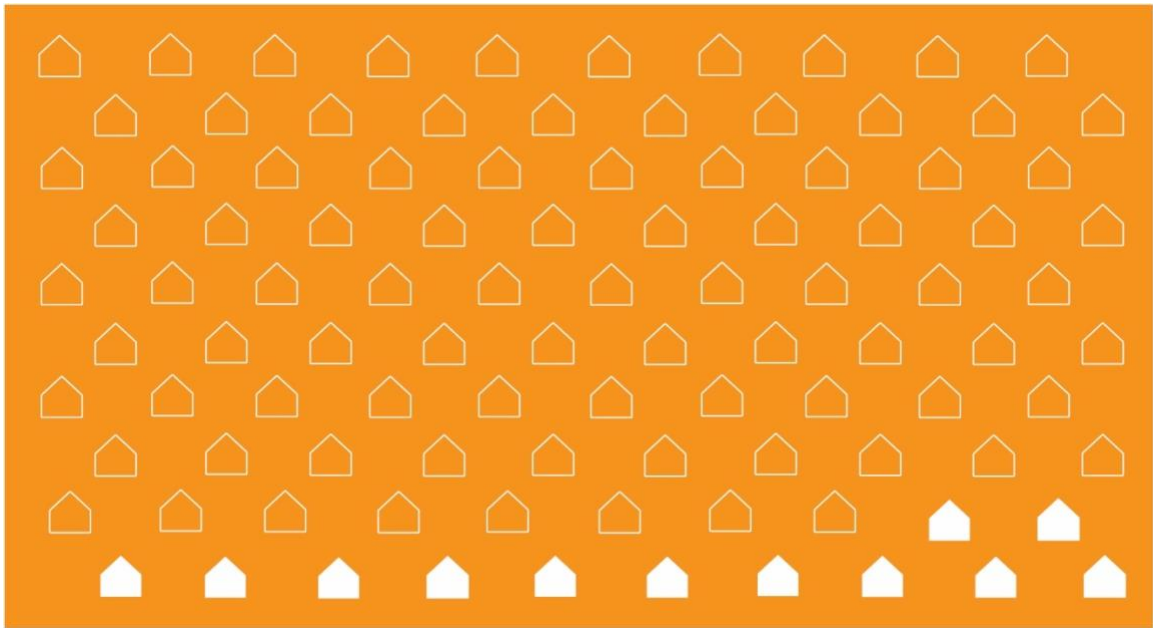


Figure 5. White Houses Represent Vacant or Abandoned Mobile Homes in the U.S.

While no data is kept specifically for North Carolina, if this percentage holds true, there would be approximately 75,000 vacant or abandoned mobile homes in North Carolina. The cost of removing and disposing of an abandoned unit can be upwards of \$10,000. This entails getting a demolition permit, hiring a contractor to demolish the home, separating parts that can be recycled, and hauling all debris to a dump or recycling facility. It could cost the state approximately \$750 million to remove all the existing abandoned or vacant mobile homes. Because of

the high cost of removal, once abandoned, mobile homes are often left in place indefinitely, posing potential fire and other safety concerns, including environmental concerns. The idea of rehabilitation or renovation of mobile home poses its own complex set of problems. Many of the original materials utilized in mobile home construction are of poor quality and not made to last very long. Because most mobile homes are not financed through traditional mortgages and rarely appreciate in value, owners can't take out home equity loans to make repairs or do renovations. Moreover, the cost of renovation is often similar to the cost of purchasing a new mobile home.

### **Research Questions**

This thesis examines whether affordable rehabilitation of older, vacant, or abandoned mobile homes is possible.

This thesis asks the following questions regarding mobile home design:

- What design solutions can be utilized to improve mobile homes?
- How can mobile homes better meet their dwellers' needs and nourish their occupants?
- How can mobile homes be made more energy efficient?
- Can reused or repurposed materials be utilized to reduce cost?

This thesis asks the following questions about individuals and families that live in mobile homes in rural North Carolina:

- How do we include mobile home dwellers in this conversation?
- What do mobile home dwellers like about their homes?
- What do they dislike about their mobile homes?
- What makes their mobile home feel like “home”?

This thesis is done in conjunction with a blog and Instagram account (150 followers), with the intention that information gathered and generated is immediately being dispersed to relevant parties. Blog entries and Instagram photos are included in the appendix for reference. The blog can be accessed online at [www.ekhannapel.wixsite.com/remobilehome](http://www.ekhannapel.wixsite.com/remobilehome). The goal of this thesis is to add voices and broaden the scope of the affordable housing conversation by trying to better understand the role that mobile homes play in rural affordable housing and how we can use design to improve them.

## **Methodology**

This thesis utilizes a mixed methods approach and is based in Participatory Action Research (PAR). PAR is an approach that uses participation and action to do community research. It seeks to understand and change the world through reflection and collaboration. PAR is grounded in action and acknowledges that the process is as important as the outcome. Buckles and

Chevalier write “We question the split between theory and technique or the notion that inquiry essentially divides into substance and thought...process speaks to the journey, not the destination. It is the path to knowledge guided by ‘small-m methods’” (2013, p. 1). Common methods used include collaborating, process mapping, generating knowledge from co-researchers, and letting research expand, grow and change as it is being conducted (Buckles & Chevalier, 2013).

PAR is sometimes called Community-Based Participatory Research, Action Research, or Street Science. The common principles behind all of these types of research is inclusion and engaging the beneficiaries of the research in the research itself (Hacker, 2013). The basic tenet is that the interaction between academia and community provides a benefit and creates knowledge. PAR starts by identifying the community, then builds on strengths and weaknesses of the community. “A community member living in low-income housing understands community needs and the realities of daily life far better than a researcher does” (Hacker, 2013, p. 11). Researchers and academics can help translate the knowledge into action.

This thesis uses a method called Photovoice. Photovoice is a PAR method that uses photos to capture aspects of an individual's daily experience and share them with others. Individuals take photographs around a subject or question, and then describe these photographs in either a written or oral form (Latz, 2017). Individuals have the power to choose how they are represented,

which is an essential part of the process. In her 2017 book, “Photovoice Research in Education and Beyond,” Larkin defines eight steps to the research: identification, invitation, education, documentation, narration, ideation, presentation, and confirmation. Identification consists of identifying the place, purpose and site of the study. Next, individuals are invited to participate and are educated on what their participation entails, are given the questions or prompts and give their consent to participate. The documentation phase consists of individuals taking photos, often with cameras that have been provided. After photos are taken, participants describe their photos in the narration phase. This is often done as either a focus group with several participants or as an individual interview, and this narration provides context to the photographs. Ideation involves the researchers (sometimes with the participants, sometimes on their own) pulling out themes that occur across narratives. Presentation typically takes the form of an exhibition. Larkin writes that an exhibition can be in the form “of a poster, brochure, website, digital story, or museum installation” ( 2017, p. 5). The confirmation phase involves understanding whether those who saw the exhibition understood the narration as well as trying to broaden the reach of the work and sustain it.

ReMobile Home will follow this process with a slight variation: a blog (<https://ekhannapel.wixsite.com/remobilehome>) and Instagram account (@Remobilehome) exist to document the process from the beginning. Some of the exhibition phase will occur on the blog, however, the blog will also document



the mobile home redesign and share general information about mobile homes and how they can be renovated. It is important that information that is gathered reaches beyond this thesis and goes back into the community. A blog is a good format for this as it is easily accessible, readable, and picture heavy. The exhibition phase of this Photovoice will primarily be in the form of a group MFA show hosted by the UNC-Greensboro Department of Interior Architecture. Photovoice participants will be invited.

## CHAPTER II

### SETTING THE STAGE

#### **History of Mobile Homes**

Mobile homes have a long history in the United States, and in many ways, are uniquely American. With the rise of the automobile in the 1920s, Americans began taking more weekend trips and as they traveled to more remote places, it was not uncommon to attach a canvas tent to a vehicle. Soon small trailers were created that allowed families to tow camping gear and tents behind their car. The first modern trailer is thought to have been constructed in 1929 by Arthur Sherman. This small wooden box on wheels had folding bunks, a stove, and an area to cook, and measured 9' long by 6' wide (Hart, Rhodes & Morgan, 2002). Sherman realized the potential and began selling his units for \$300. By 1933 he had grossed \$3 million and was considered the largest manufacturer in the industry. Soon, parks had sprung up for families to park their trailers during travel.

While trailers had been a part of the middle-class recreation, the Great Depression changed this situation (Hart et al., 2002; Hartman, 2011.; Weil, 2003). With housing shortages and few affordable housing options, more people began using trailers as permanent housing. This was more common with

traveling salesmen, construction and agriculture workers, but as the Great Depression worsened, families turned to trailers. Almost immediately, some of the stereotypes that still exist today, came into existence. Critics claimed that “trailer residents did not pay their fair share of taxes for public services, that trailers depressed the value of adjacent properties, and that trailer people threatened the stability and morality of the community” (Hart et al., 2002, p. 9). In response, municipalities started to pass laws and ordinances that restricted where trailer parks could be located, often prohibiting them inside city limits.

The influence of World War II changed the idea of trailers for recreation to mobile homes for permanent residence. World War II caused a tremendous housing shortage, and workers flocked to areas close to factory jobs. People lived in whatever was available: barns, garages, tents, trailers, etc. At the same time, government agencies began to purchase trailers to serve as temporary housing. The Spartan, a trailer specifically designed for the government, featured a kitchen and bathroom and was 22' long and 8' wide. During the war the government purchased 35,000 of these units and constructed 8,500 trailer parks (Hart et. al, 2002; Hartman, n.d.). The post-War housing shortage forced people to continue to live in trailers, and trailers became a legitimate permanent residence during this time. The government continued to use trailers as temporary or emergency crisis housing after World War II.

Despite some improvements in stereotypes during the War, the negative view of trailers persisted in the 1950s and 60s. A 1948 market survey found that

most people who lived in trailers were construction workers or members of the military. By 1959, the majority of trailer residents were young families (Hart et. al, 2002). These young families wanted homes that were less mobile, and more focused on comfort and spaciousness. Throughout the 50s, most state laws regulated trailer size and trailers could be no more than 8' wide, 35' long, and 12 ½' high. By 1957 laws were relaxed to allow trailers up to 10' in width. By the 1960s, a 12' trailer was the norm, and by 1969, the industry was constructing 14' units as well as multi-section units ("doublewides"). As trailers became more house-like, the term "mobile home" became more heavily used.

Interiors of mobile homes were designed to resemble conventional houses, with a kitchen, bathrooms, living/dining area, and bedrooms. Modern amenities like vaulted ceilings, kitchen islands, and spacious closets were soon introduced. Some homeowners added additions, porches, walkways, and sheds to their home, making their homes less "mobile" and more conventional (Hart et. al, 2002).

Prior to the 1970s the industry remained almost entirely unregulated, and there were serious safety concerns about the quality of many mobile homes. The HUD code came into effect in 1976, acts as a building code for mobile homes, and is considered preemptive under Federal law, as it takes precedence over state and local building codes. The code covers the design and construction of mobile homes as well as fire safety, plumbing, heating, and electrical systems.

Despite this code, critics claim that there is weak oversight and that the HUD code does not do enough to protect consumers and dwellers.

As the manufacturing industry became more efficient and mobile home standards increased, the mobile home industry boomed in the 80s. Between 1980 and 1990 there was a 57 percent increase in the number of mobile homes produced. In the late 1990s and early 2000s, however, the manufactured home industry suffered a crash that presaged the mid-2000s housing crisis. Lenders had relaxed credit standards, lowered documentation requirements and even falsified credit applications (Semuels, 2014). Smitz writes, “Consumers were left homeless after the resulting flood of repossessions. In 2000 alone, insiders repossessed an estimated 75,000 MHs, representing the loss of homes for 75,000 individuals and their families. For dealers and manufacturers, these repossessions created stockpiles of cheap, slightly used MHs. Manufacturing stalled and weaker manufacturers and dealers closed their doors, leaving stronger companies to reign supreme” (2004, p. 388).

### **Building Material Reuse**

There is a growing recognition that reusing building materials is a sustainable practice that has the potential to greatly reduce waste in building projects. Building waste is defined as unwanted or unused materials (Hebel, Wisniewska, Heisel, 2014). Building materials are reused for a variety of reasons, including to reduce the impact of building construction on the environment, to

benefit a construction project (ex. reduce costs), or to improve the reputation of those engaged in the construction industry (Addis, 2006). Historically, building materials such as stones or iron were often reused and the recycling of elements was considered the norm (Bahamon & Sanjines, 2010).

Typical construction projects often result in tremendous waste, either through existing materials that are removed from buildings or from excess materials purchased that are never installed (or only a portion is installed). The main barriers to reclamation and recycling are lack of knowledge and inertia (Addis, 2006; Hebel, Wisniewska, Heisel, 2014). Additionally, for architects, reuse causes the design process to be flipped: materials must be identified before a space can be designed (Bahamon & Sanjines, 2010). Typically, a plan is made and a material must fit the plan. With reuse, waste becomes the starting point. Current societal thinking that garbage is considered filthy and secondhand items are looked down on make some users reluctant to reuse materials. This adds additional challenges to design projects. This thesis seeks to use many reclaimed or repurposed building materials in the rehabilitation of the mobile home.

There are many sources for used building materials though they may operate in less formal ways than typical building supply stores. Nationally, there are 920 Habitat for Humanity Restores which sell furniture, used building materials, and home goods. Additionally, Craigslist and Freecycle are both

excellent sources for used building materials. There are also local architectural salvage stores that sell historic building materials.

It is worth noting that rehabilitating a mobile home, even if just the shell of the structure is reused, is also a type of reuse. There is significant literature around the concept of building reuse as being a “green” strategy (Elefante, 2012; Preservation Green Lab, 2011), with a key tenet being that you cannot build your way to sustainability; you must conserve your way to sustainability.

Approximately 55 percent of all existing buildings in the U.S. were constructed from the 1950s through the 1980s (Elefante, 2012). Many of these buildings, like mobile homes, were constructed with materials that were less durable and rely heavily on fossil fuels. Elefante writes that we must find ways to transform these buildings into environmentally efficient residences. While historic preservation generally focuses on the idea of retaining and repairing rather than replacing, replacement is called for if a building was constructed with systems and materials that never properly functioned in the first place (as is common in this era of building).

The National Trust for Historic Preservation’s 2011 groundbreaking study “The Greenest Building: Quantifying the Environmental Value of Building Reuse,” came up with several key findings that are relevant in considering rehabilitating older mobile homes. The report found that building reuse almost always has fewer environmental impacts than new construction, with savings ranging from 4 to 46 percent, depending on building type. Also relevant, the report found that

original materials matter. Retrofits and rehabilitations that require more new materials produce fewer environmental benefits. The examples they studied of a warehouse being converted into residences and an addition being added to a school are very different than a mobile home rehabilitation, so it may not be appropriate to extrapolate their results.

### **Mobile Homes in Orange County, NC**

Orange County is located in north central North Carolina. In 2011 the median income was \$56,055, compared to the North Carolina median of \$46,291 (*2016-2020 Affordable housing strategic plan for Orange County, NC*). The 2010 U.S. Census showed that approximately 40 percent of Orange County residents are considered medium to low-income, and 16.9 percent live below the poverty line. Additionally, 54 percent of renters are considered “rent burdened”- spending more than 30 percent of their income on housing.

Mobile homes make up 7.9 percent of Orange County’s housing stock, lower than the state average of 14 percent. In surrounding counties including Alamance, Caswell, and Person, mobile homes make up a larger portion of the housing stock. In general, rural areas of the county have more mobile homes than urban, or semi-urban areas. The county has 4,809 mobile homes, with slightly more than half located outside of parks (American Community Survey 2010-2014). It is estimated that there are 836 vacant mobile homes in the county. The majority of the county’s 100 mobile home parks, which contain 2,017 mobile



homes, are clustered around the federal highway corridors. In January 2016, the county analyzed all mobile homes located in parks and found 378 (18.74 percent) to be in sound condition, 990 (49.08 percent) to be in need of minor repairs, 580 (29.76 percent) are in need of major repairs, and 69 (3.42 percent) are economically infeasible to repair. Mobile home parks are permitted in Mobile Home Park- Conditional Zoning Districts, however this requires rezoning by the Board of County Commissioners. This zoning came into effect in 2010. In the last fifteen years, no new mobile home parks have been constructed. The average sales price of mobile homes has also increased from \$41.32 per square foot in 2010, to \$45.41 in 2014.

The county has a rehabilitation grant program that provides rehabilitation grants to individuals with disabilities and the elderly for projects that cost between \$5,000 and \$45,000. While this is helpful with older homes in need of improvement, mobile homes are not eligible for this program. Additionally, there are no programs in place to remove and dispose of vacant or abandoned mobile homes. Such programs exist in counties surrounding Orange County. While the 239-page report discusses mobile homes that are located in mobile home parks, rating each one on its condition, there is little mention of mobile homes that are not located in mobile home parks, even though the majority of Orange County mobile homes are located outside of parks.

## CHAPTER III

### REMOBILE HOME: A DESIGN PROPOSAL

#### **Context**

Originally, I had wanted to purchase and renovate an older mobile home. My goal with this was to understand how mobile homes are constructed and to learn about the complexities of mobile home construction, by renovating a mobile home. However, both time and money were constraints. The next best option seemed to be to find someone who was renovating an older mobile home who would allow me to be a part of their process. I decided to look for someone who owned an older mobile home that would let me photograph, document, and create a redesign for it.

Through word of mouth, I got in touch with a couple, Kim and Teresa, who had recently purchased a 1974 mobile home, about three miles outside of downtown Hillsborough. Teresa and Kim purchased the home for their son, who has disabilities and is on a fixed income. They needed a home for him that would be easy to maintain, safe, and perhaps most importantly, that had property taxes that he could afford on his limited budget. They purchased the home in 2017 for \$61,000, and the tax value is listed as \$42,731, with yearly property taxes of

about \$500 (“Orange County North Carolina Geographic Information System”).

The property sits on a half-acre.



Figure 6. Teresa and Kim’s Mobile Home.

The couple’s original plan was to make minor repairs to the mobile home. As soon as they began removing wall coverings and flooring they realized that a much larger renovation was necessary. A leaky roof, toilet, hot water heater, and windows had caused massive water damage that had affected nearly all parts of the home. As Teresa said frequently in our conversations, “water is the villain.” Teresa and Kim are now in the process of entirely gutting and rebuilding

the home. They are changing the floorplan, installing a new kitchen and bathrooms, rewiring all electrical, replacing all interior trim and flooring, installing drywall, and updating all existing mechanical systems. What started as replacing shag carpet has now become a full-scale renovation. My hope with witnessing Teresa and Kim's renovation was that I would be able to understand the challenges of renovating an older mobile home. I divided this redesign into several parts: programming, schematic, and construction drawings with renderings. I also created a site model, material boards, and a budget.

## **Programming**

I began programming for the mobile home redesign with a creed. As a designer this is my way of goal setting. Throughout the project I came back to this creed to make sure that my actions and designs are aligning with my original goals. The creed for this redesign is as follows:

I will design a mobile home that is true to its form and size.

I will design a home that is accessible to many.

I will design a home that is affordable.

I will design a home that emphasizes materials: their impact on the environment and on human health.

I will design a home that is thoughtful. That will nourish its inhabitants. That will be dry and warm in the winter and cool in the summer.

I will design a home that is peaceful. A home for meals to be shared, conversations to be had, for relationships to be cultivated.

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I then needed to document and photograph the home so that I could create an existing floorplan. When Teresa and Kim started the renovation, the mobile home, measuring 12' by 65' for a total of 780 square feet, had three bedrooms and two baths. They wanted to get rid of one bedroom to allow for a more generous living space. By the time I measured and documented the home, Teresa and Kim had already demolished the third bedroom. It had been next to the bathroom.

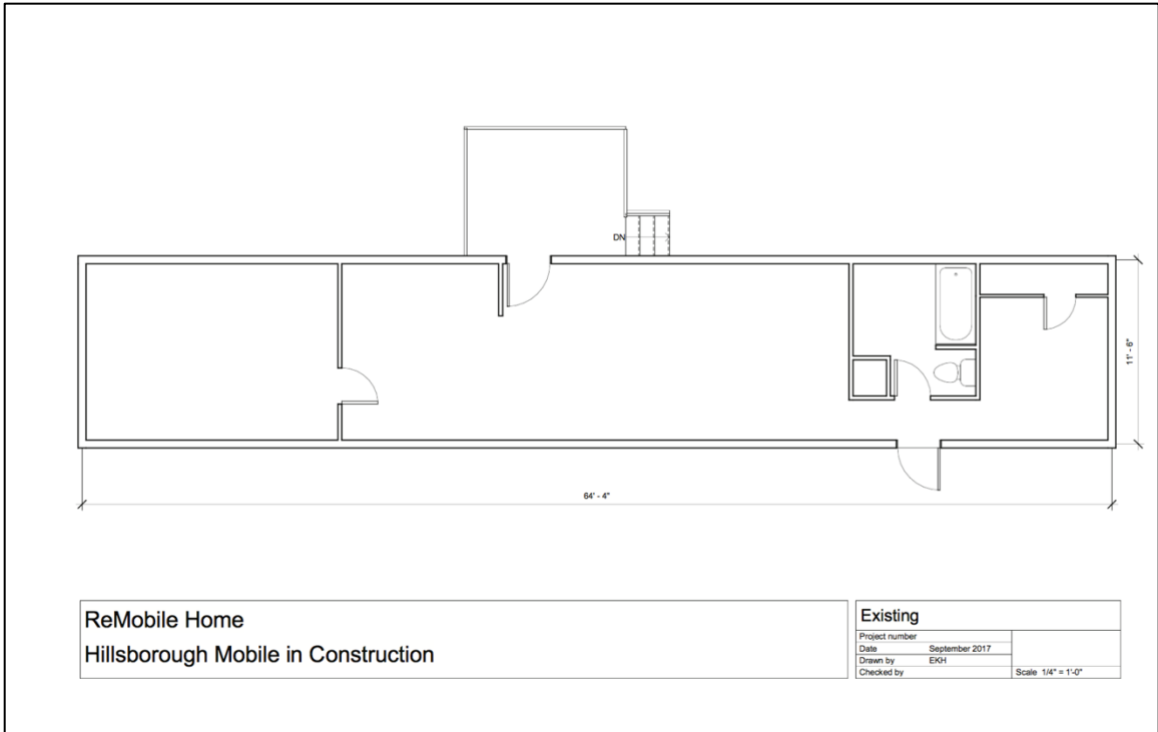


Figure 7. Existing Floor Plan.

Materials were a major concern. The mobile home was constructed in 1974, before the HUD code went into effect. Throughout the renovation, Kim and Teresa were shocked by the materials that were used. Thin wall board coated the walls and popcorn ceiling board was stapled to the ceiling. Shag carpet had very little shag left to it. Much of the cost and time associated with their renovation involved replacing these materials with materials that would last longer.

Structure was also a concern. Walls in mobile homes are constructed differently than site-built homes. In mobile homes, all interior partition walls are non-load bearing and exterior walls are designed to hold the entire load. HUD,

the governing body for manufactured homes, regulates how mobile homes are built and has strict requirements for load. There are several types of load. Dead load refers to all permanent fixtures of the home like the exterior and interior walls, roof, and systems. Live load includes use and occupancy. Wind load is the "lateral or vertical pressure or uplift on the manufactured home due to wind blowing in any direction" (Legal Information Institute). Wind load requirements vary by location. All of these loads are carried by the exterior walls and roof systems. To make things a little more complicated, mobile homes must also be able to withstand a trip down the highway at 55 mph (think potholes). This is all figured out by a structural engineer when the home is originally manufactured, though these requirements, especially wind requirements have increased dramatically as the HUD code has been updated.

Houses get their strength in a variety of ways. In a site-built home, walls are constructed of studs (a 2x4") every 16" on center. In mobile homes there is a lot more variability in lumber dimensions. Mobile home walls might be constructed of 2x2"s or other non-standard lumber and rafters, which support the roof are also constructed of non-standard lumber. In both site-built and mobile homes, exterior walls use plywood or OSB (oriented strand board, which is an engineered lumber that is a combination of wood flakes and adhesives) as sheathing for additional support. Siding goes on top of the sheathing.

Exterior walls are insulated and then covered on the interior side with drywall or a similar material. Insulation requirements have also increased as

there has been a push for more efficient mobile homes in recent years. Older mobile homes typically have minimal insulation. Because drywall is a heavy wall material, it is rarely used in mobile home construction. In older mobile homes, walls are usually vinyl on gypsum (VOG), with battens to cover where the panels meet. In Teresa and Kim's mobile home, the walls are a thin paneling, approximately 1/4" that had been stapled to the wall framing members.

With mobile homes, interior wall thickness varies tremendously. Some interior walls are as thin as 2". The mobile home studied for the project had interior wall thickness of 3 and 4". Exterior wall thickness also varies, often between 4 and 6". Newer mobile homes generally have thicker exterior walls to allow for additional insulation. The photo above shows the home after the home owners removed all the 1/4" wood paneling and installed drywall.

A roof is perhaps the most important part of any home's longevity as it protects a home from the elements and is the first line of defense against water.



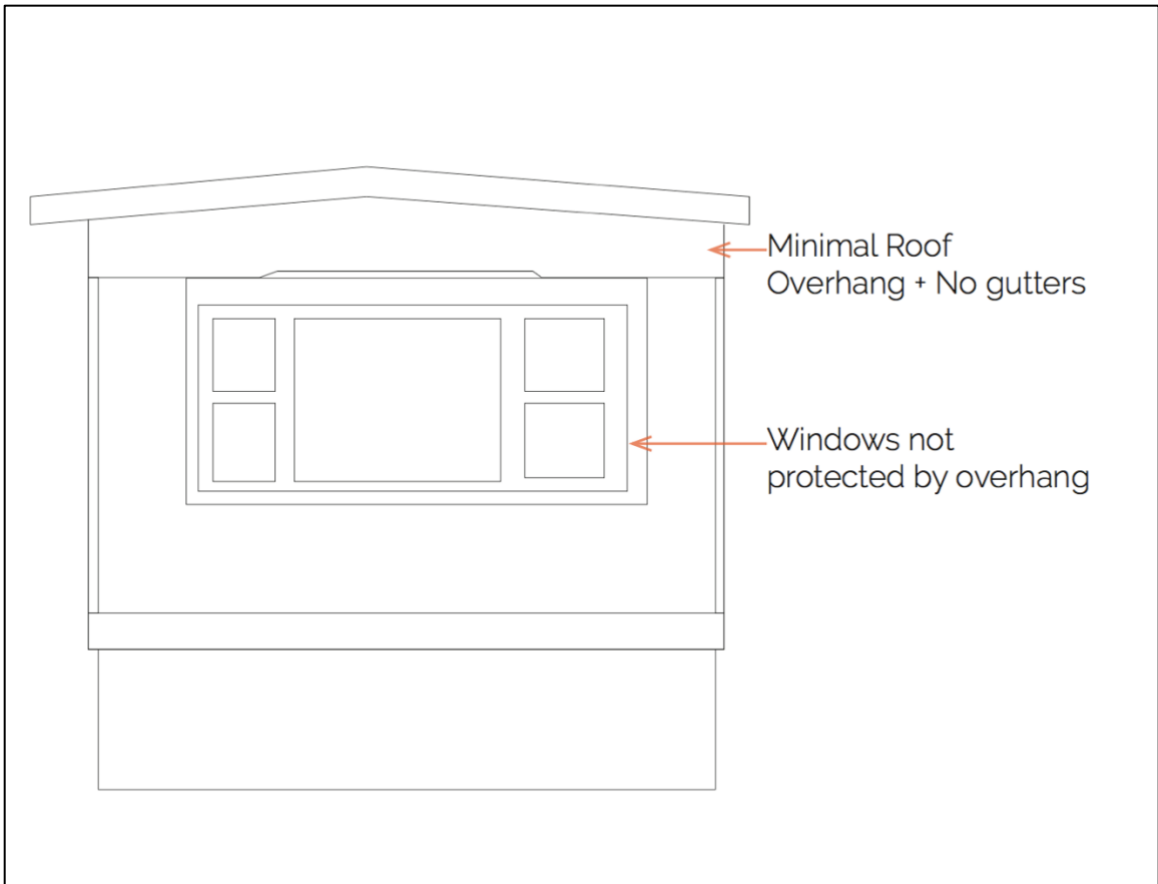


Figure 8. A Mobile Home Usually has Minimal Overhangs.

Many mobile home roofs have minimal slope and lack overhangs and gutters, which makes it easier to transport. However, flat roofs require more maintenance and generally don't last as long, and without slope and gutters moving water away from a home, water can easily collect. This combination of no gutters, no overhang, and flatter roofs generally equates to more leaks.

There are two options for repairing mobile home roofs- the first is to remove the roof system and replace any damaged plywood or OSB that is underneath. The second option is to install a new roof over the existing system,

referred to as a roof-over. While a roof-over provides another protective coat on the roof and prevents future leaks, it doesn't mitigate any older leaks. A positive aspect of a roof-over is the possibility of adding an additional layer of insulation during the process, increasing the energy efficiency of the home.

Mobile home floor systems sit on top of a chassis, a metal structure made up of steel beams, cross members and a steel hitch. Chassis use chambers, or curved beams, to distribute weight evenly and are designed for each specific model. In newer mobile homes, chassis are sprayed with a tar-based agent to prevent rust.

The floor system is made up of joists, usually 2 x 6"s, and is covered in OSB or plywood. The floor is also insulated below. Steel, concrete masonry units, or concrete poured and reinforced piers and anchors connect the chassis to the ground. Piers should be placed every 8' to 10' and should go below the frost line to prevent movement.

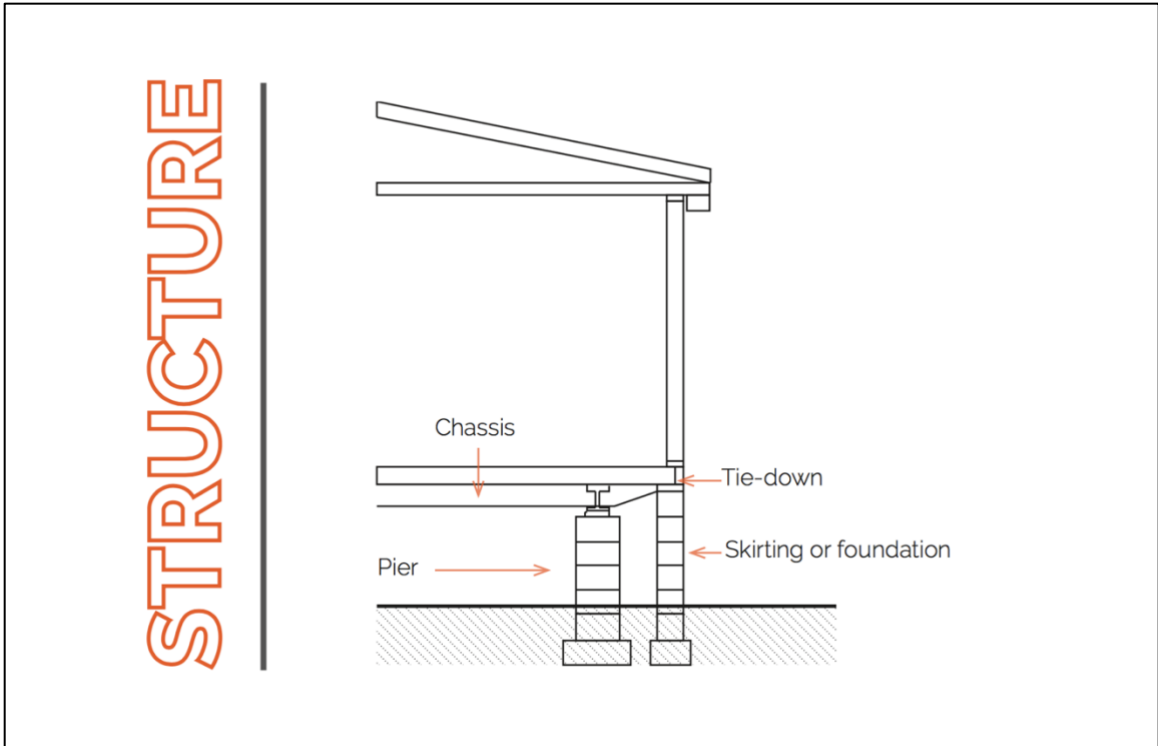


Figure 9. The Typical Structure of a Mobile Home.

### Precedent Study

A precedent study is an important part of the design process. Seeing what other designers, architects, and mobile home owners have done can greatly influence the design that I propose. Two precedents, shown below, were studied. These three precedents show varying levels of both renovations and budgets, though one commonality is that each mobile home is older and had extensive water damage.

## The Whim

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**Before**



**After**

Figure 10. The Whim.

The Whim was named as such, as its owners purchased it “on a whim.” The Whim was an exterior renovation of a 1995 Wick Artcraft Model CA-679 single wide. The Whim sits on a lake in Wisconsin and the owners wanted to expand their outdoor space and connect the home to the landscape. They successfully did this by adding a wraparound deck with pergolas on three sides. They also covered the existing vinyl siding with cedar shake shingles. The roof was built with a significant slope to keep snow from piling on it and the pergolas were built to allow wind to pass through (there is quite a bit of wind that comes off the lake). The open style pergolas allow sun to heat the home in the winter, while vines growing up the pergola in the summer, help shade the home. The owners also removed the mobile home’s bay window and replaced it with a row of windows at an optimal height for lakeside views. In the process of removing the

bay window, they reconstructed the walls using 2 x 4's and added insulation. The owners also built a permanent foundation for the home and covered it in found river rock. The cost of the exterior renovation was around \$10,000.

The Whim is a great example of an exterior mobile home renovation that is both cost efficient and addresses some of the common issues with mobile homes. Adding additional exterior siding helps with insulation, as does removing older windows and replacing them with more efficient windows. The addition of the deck and pergola connects the mobile home with its site and connects it to the lake. The owners used many environmentally friendly materials and found objects like river rocks and cedar posts. By doing the work themselves, the owners will be able to keep costs low.

## Trailer Wrap

University of Colorado Architecture Students

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Figure 11. The Completed TrailerWrap Project.

TrailerWrap was a project completed by University of Colorado Architecture students. The project was a collaborative design and build project. Over two years approximately 50 undergraduate and graduate students worked on the home, assisted by three professors. The original trailer constructed in 1964 and measuring 10'-4" x 47'-0", was on its way to the landfill. The students started by demolishing the trailer down to the chassis. The new trailer they constructed is slightly wider at 12'-0". The interior is a loft like space with a central core for a bathroom and kitchen. There is a large deck on the front and a

large, expansive clerestory was added on the North elevation. Additionally, ceilings were also enlarged. Many materials used were repurposed or salvaged including doors, countertops, flooring, and decking. The home is located in a cooperatively owned mobile home community. Financial support for the project was provided by the community. Construction materials totaled \$36,000 (“TrailerWrap Project”).



Figure 12. The Original Mobile Home, Before it was Stripped Down to its Chassis.

While I think this project is successful in many ways, I think it falls short in others. Teaching architecture students’ hands on building skills while also engaging them in questions of class, stigma, and affordable housing is certainly an important task. However, I think this project makes the case for rebuilding, rather than renovating mobile homes. The entire home was demolished and all

that was diverted from the landfill was the original chassis. In many ways, the newly constructed trailer loses its original form on both the interior and the exterior. The almost entirely open interior (there is no bathroom door) looks like the interior of a downtown loft. This renovation begs the question: is this still a mobile home?

## **Materials**

The poor quality of many of the original materials makes using quality materials in future renovations more pressing. For this redesign an emphasis is placed on using materials that are reused, environmentally friendly, and have a long lifespan. A few key materials are featured below:

### Cedar:

Cedar is a soft wood that is naturally rot and pest resistant. If properly cared for cedar siding can last for decades. It can be painted, stained, or left untreated (it will turn silver). Wood is a renewable resource and when the home needs to be re-sided, the cedar will naturally biodegrade, unlike synthetic sidings. Unlike pressure treated wood, working with cedar is not harmful for human health and there are no concerns about disposing of the waste (unless it has been treated). The cost of cedar varies; B-Grade cedar costs \$2.75-\$3.75 sq./ft.



### Corrugated Metal:

Corrugated metal can be used for roofing, siding, and skirting. Metal siding is water, rot, and insect proof. It is affordable and easy to install and doesn't need to be sealed or painted. The cost is approximately \$10 for a 2' x 8' panel. Panels can also be purchased from Resale stores or Craigslist for approximately half the cost.

### Vinyl Doublehung Windows:

Mobile home windows come in very particular sizes, so window options are determined by what types of windows mobile home manufacturers sell. Vinyl windows are the best of the options available. Vinyl doublehung windows are insulated and have efficient glass. Doublehung windows allow owners to open each sash. Vinyl has a relatively long lifespan and is a good material at preventing heat loss. The cost per window depends on size but ranges from \$100-300.

### Reclaimed Wood:

Reclaimed wood can be used as an interior wall material, in place of drywall. Drywall cannot usually be purchased used, is tedious to install and requires painting. Reclaimed wood can be equally tedious to install; however, it can often be acquired for free or for a minimal cost. Additionally, reusing a material is environmentally friendly. Wood walls can be oiled or painted. Reclaimed wood flooring can also be sourced as a low budget and sustainable

option. The cost of reclaimed wood varies but can often be found for free if you're willing to dismantle a building.

#### Sinks, Cabinets, Appliances, and Lighting:

Fixtures such as sinks, cabinetry, and appliances can be purchased from Resale Stores or on Craigslist. Purchasing these items used is environmentally friendly as it is reuse. The cost of these items varies. Local sources for reused materials include the Habitat ReStore, the Reuse Warehouse, Craigslist, neighborhood listservs and Freecycle.

#### **WELL Building Standards**

While spatial requirements and materials are important in creating a safe and healthy home, this redesign seeks to go beyond this and to ask the question: what makes a mobile home feel like home? But how do we quantify ideas like the soul of a house, or the notion of home? Does a home feel like home because of materials or spatial planning or furniture? Or is it a less tangible expression or feeling?

One attempt to understand this further and to try to quantify it in some way is with the WELL Building Standards. The WELL Building Standard consists of features along seven concepts that aim to address design and construction of buildings as well as how space impacts and influences human behaviors in

regard to health and well-being. The goal of WELL is to put people at the center of the design (Loria, 2015). The categories that the WELL standards focus on are water, fitness, nourishment, air, light comfort and mind. The WELL Building standard is generally used for multi-family residential and commercial projects, though many of the ideals and principles can be applied to residential design (*"The WELL Building Standards Features"*). Similar to other green certifications, projects can apply for this certification. To maintain certification, projects must be recommissioned every three years. Certification levels are silver, gold, and platinum based on the number and type of optimization features that have been pursued.

This redesign will utilize the WELL Building Standards in the following ways:

**Water:** Most mobile homes rely on well water. Water will be tested to ensure that it is safe for drinking. Water catchment is one way to utilize water resources.

**Fitness:** Mobile homes are one level, so stairs cannot be utilized to optimize fitness. Bike storage will be included. Outdoor space will be utilized to promote pedestrian movement.

**Nourishment:** This standard focuses on eating spaces. Communal eating spaces will be created. Additionally, the kitchen will be integrated into the living spaces. Gardening space will be included in the site plan.

**Air:** Home will be inspected for leaks or water damage that can cause mold. All windows will have screens to increase air flow. Additional windows will also be introduced to increase air flow. Low VOC paints, sealants, and materials (flooring and insulation) will be used.

**Light:** Additional windows will be added to increase light. Additionally, several existing windows will be enlarged. All new lights will be LEDs. Blinds will also be used to control light.

**Comfort:** Restrooms and kitchens will be separated from bedroom spaces. Textiles will be used to mitigate sound. Thermal comfort will be a priority.

**Mind:** Users will be incorporated into the design and planning of the home. This project aims for beauty and mindful design as defined by human delight, celebration of culture, spirit and place, and use of art. Spaces will also be adaptable as human need changes, and a biophilic design using space planning, lighting, and environmental impacts will be implemented.

## Drawings and Models

After programming was completed, diagrams and schematic designs were created. Two layout options were looked at. In the first option, bedrooms were placed at opposite sides of the mobile home. This is similar to the current layout of the mobile home. The positives of this layout are that there is acoustical privacy between bedrooms and utilizes the existing entry and porch.

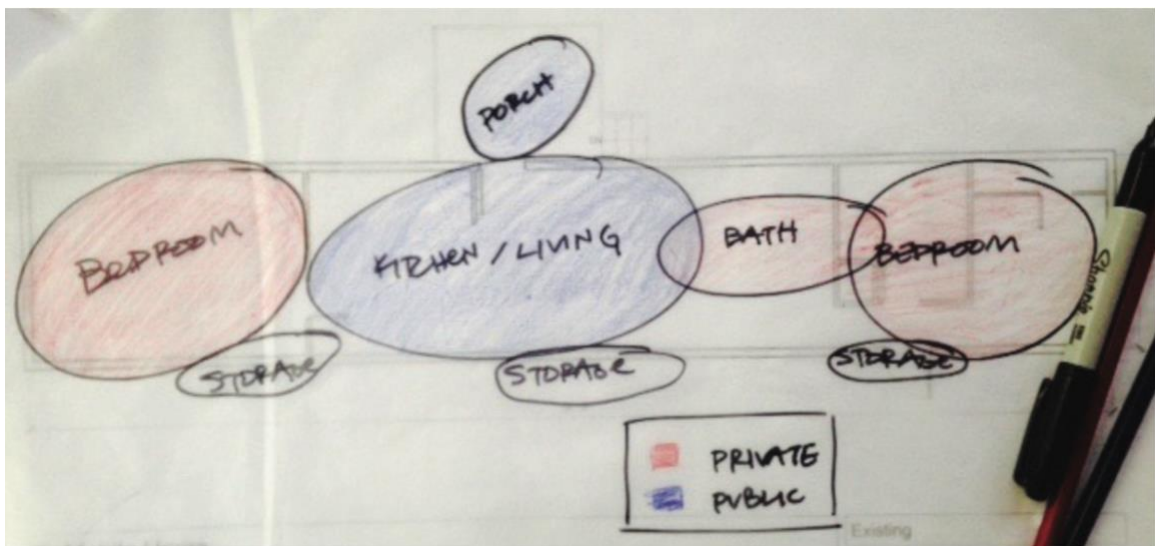


Figure 13. A Bubble Diagram of One Possible Layout.

A second design was considered that placed both bedrooms next to each other and put the living space and kitchen on the north side of the mobile home.

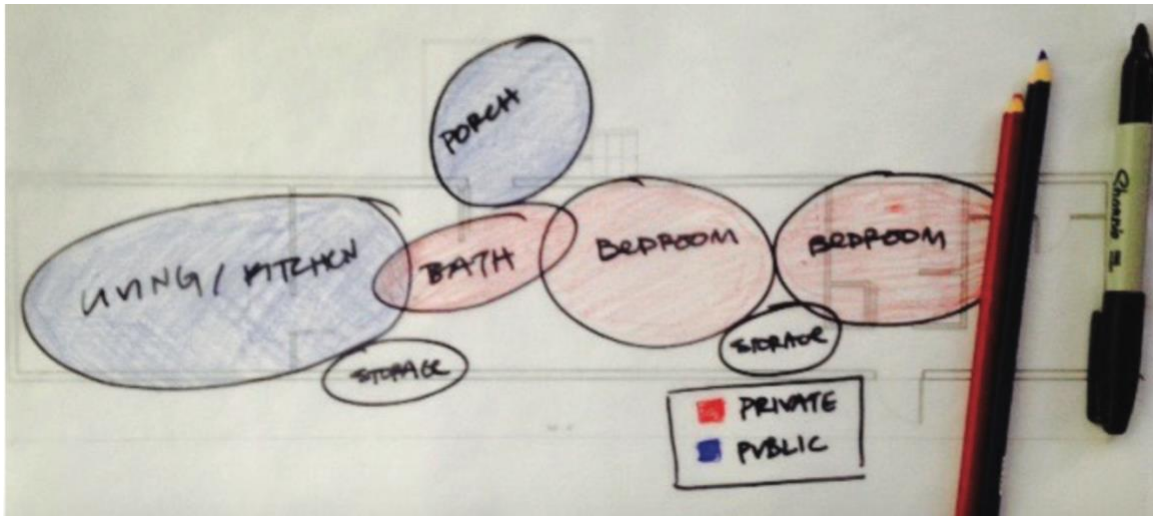


Figure 14. A Bubble Diagram for a Second Possible Layout.

During this time, I continued to consider the issue of water. I started to loosely work on a budget for the renovation and considered all of the costs associated with water damage: a new roof, new windows, new siding and new interior flooring and walls. Could I design something that could help mitigate these costs? I found inspiration in The Whim precedent, which constructed a large front deck that created a porch with a large roof overhang. Around this time, I was walking on a friend's farm. As I walked by the barn, I noticed an airstream trailer parked underneath it. The trailer was being gutted and was temporarily being worked on under the cover of the barn. These two examples inspired me to think, what if a structure like this covered the entire mobile home?

I started developing a model that I thought of as a cocoon for a mobile home. The cocoon consists of a deck and roof structure and shelters the mobile home underneath. It is three sided so that a mobile home can be moved if

necessary. The three-sided porch would be eight feet wide, wide enough to have a table or rocking chairs. Having a roof over the entire mobile home would make it unnecessary to replace a roof, windows, or siding. All water would be moving away from the home. While interior water damage would still have to be repaired, future water damage would be mitigated. I also hoped that this structure would serve another purpose: connect the home to its site and foster a connection to the outdoors. When I try to understand what makes a home feel like “home,” the connection to nature that a rural setting provides is extremely relevant. I explored this idea further by constructing a model of Teresa and Kim’s home with a cocoon on it.



Figure 15. A Model of Teresa and Kim's Home With a Cocoon.





Figure 16. A Model of Teresa and Kim's Home with the Cocoon Shows the Site.

Encouraged by this laser cut model, I decided to create a model in Revit. In considering the layout and how this interacted with the wrap, I decided to maintain a fairly similar interior layout with bedrooms separated by central living spaces. Changes included adding additional storage and enlarging and opening up the kitchen to the living space.

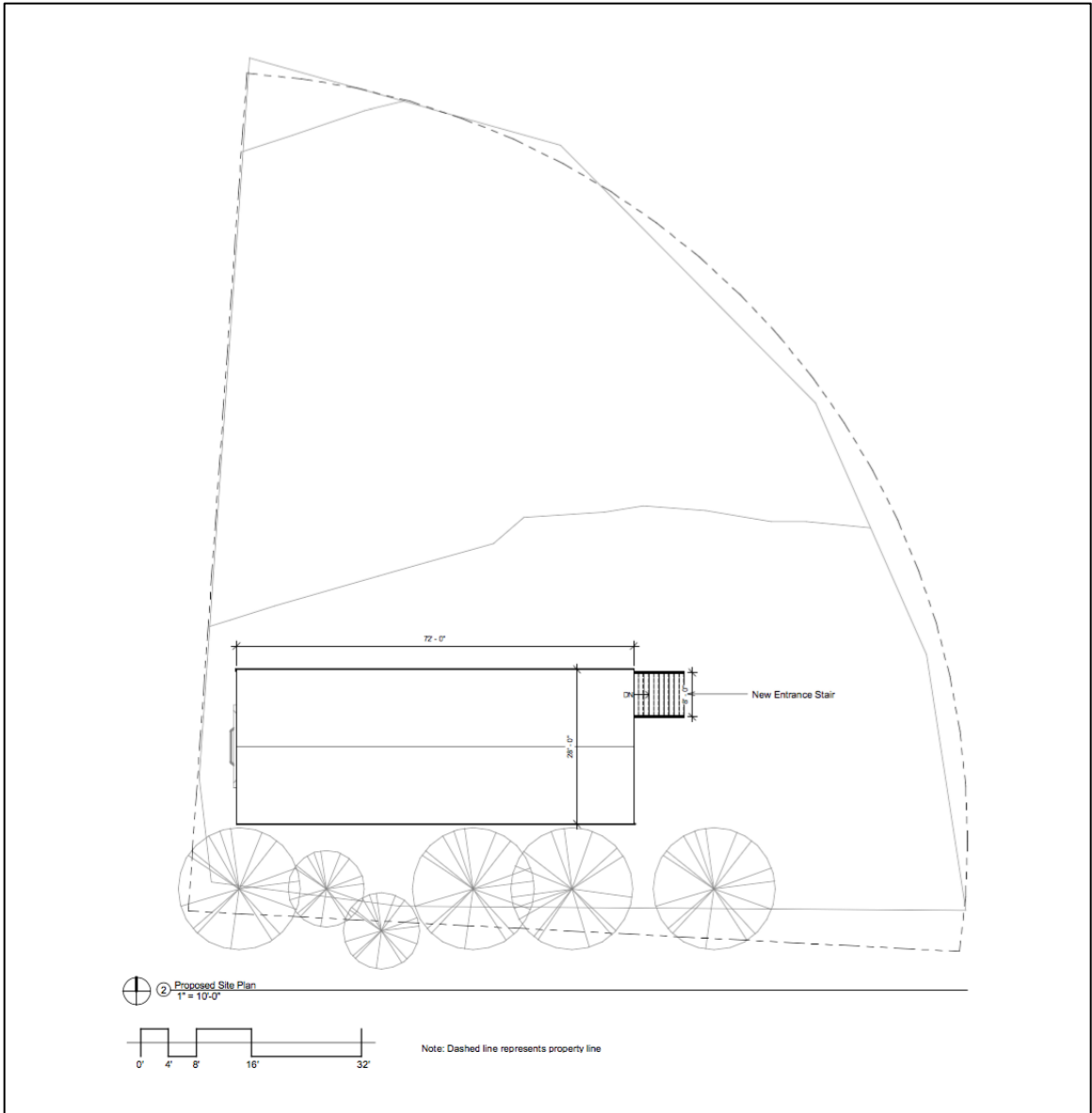


Figure 17. A Proposed Site Plan.

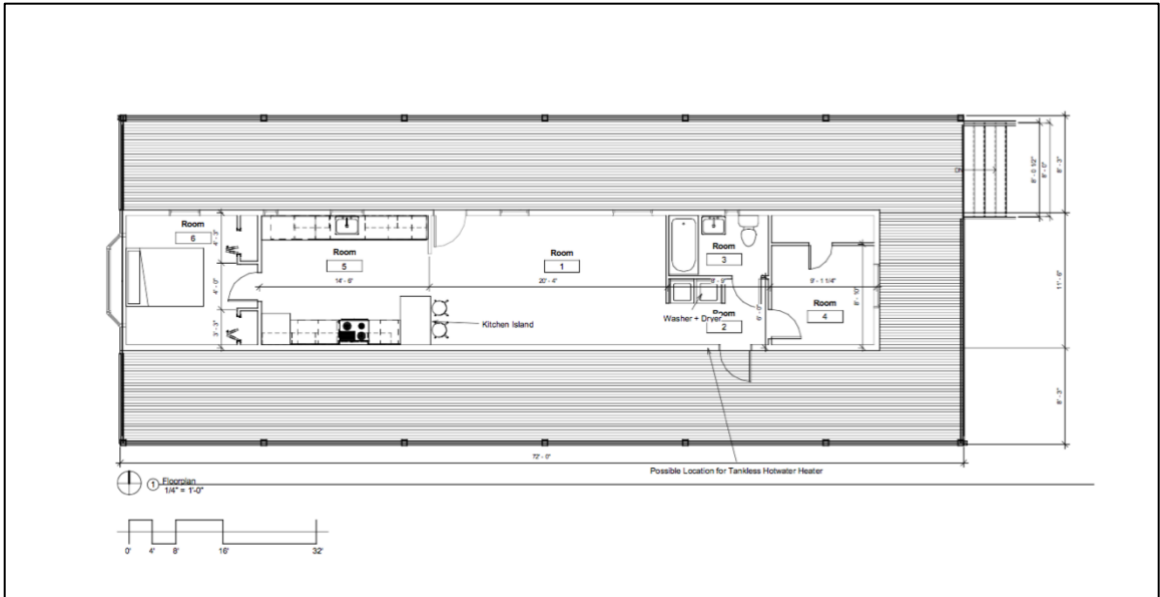


Figure 18. A Proposed Floor Plan Shows the Addition of the Cocoon.

Renderings created in Revit and Photoshop allowed me to better understand and communicate the relationship between the mobile home, wrap, and the site.



Figure 19. A Rendering Shows the Mobile Home with Cocoon.



Figure 20. A Rendering Shows the Mobile Home with Cocoon.

### **Budget and Analysis**

Budget was a major concern with this renovation. If my goal is to understand whether rehabilitating older mobile homes is a viable way to increase affordable housing, then the budget is key. During my Photovoice interviews (see below) and my discussions with Teresa, Kim, and other mobile home dwellers, I came to realize that most mobile home owners do their own work on their homes. Teresa and Kim were doing the entire rehab themselves, with occasional help

from their son. The vast number of mobile home DIY blogs that exist also attest to this. Because of this, I chose not to include general labor costs in my estimate. I did include labor costs for plumbing, electrical, and HVAC, which are more specialized trades. I broke my estimate into interior costs, exterior costs, and cocoon costs. If a cocoon is constructed, many of the exterior costs are no longer necessary, so this complicates the budget somewhat. To create this estimate I consulted with a builder who does residential construction in Orange County and has also gutted and renovated his own trailer. This estimate does not include the original procurement of an older unused mobile home. That said, mobile homes are often offered for free or a few hundred dollars on Craigslist. The condition of older mobile homes is so vastly different that costs will vary tremendously. For this estimate, interior costs come to approximately \$13,000 with exterior costs at \$7,200 for a total cost of \$20,200. The cocoon is estimated at \$8,600.

<b>Material</b>	<b>Quantity</b>	<b>Price Ea</b>	<b>Price Total</b>
<b>Framing</b>			
Rafters, 2 x 10 x 12'	72	8	576
Posts, 6 x 6 x 10'	12	25	300
Banding, 2 x 10 x 10'	12	15	180
Collar Ties, 2 x 6 x 6'	18	6	108
Angle Bracing, 2 x 6 x 8'	10	6	60
<b>Roofing</b>			
Metal Roofing	48	38	1824
Purlin	28	4	112
Ridge Cap	7	14	98
<b>Stairs</b>			
Stringers	2	10	20
Risers + Treads, 2 x 10 x 10'	5	15	75
<b>Deck</b>			
Decking, 2 x 6 x 12'	225	9	2025
Joists, 2 x 10 x 12'	72	18	1296
Banding, 2 x 10 x 12	14	18	252
Footings, 22	30	4.5	135
<b>Misc</b>			
Screws + Fasteners			800
			<b>7861</b>
		Plus 10%	<b>8647.1</b>

Figure 21. An Estimate for Materials Needed to Construct the Cocoon.

Item	Quantity	Estimate
<b>General</b>		
Drywall, 73 sheets		657
Framing for new walls		500
Wood Flooring for common space		400
Tile Flooring for bathroom + kitchen		400
Plywood subfloor, 25 sheets @ \$25		625
Interior Paint (12 gallons, about \$30/gal)		360
<b>Kitchen</b>		
Kitchen Cabinets		600
Kitchen Countertop		600
Sink		50
<b>Lighting</b>		
Can Lights (25 ea)		300
Pendant Lights (50 ea)		100
<b>Systems</b>		
Hot water heater		291
Mini Split		1646
<b>Bathroom</b>		
Toilet		100
Bathroom Sink + Vanity		100
Bathroom tub		200
Screws, fasteners, misc.		1000
<b>Electrical Upgrades</b>		2000
<b>Plumbing Upgrades</b>		2000
		<b>11929</b>
Plus 10%		13121.9
	<b>Interior/Exterior</b>	<b>20,261.05</b>

Figure 22. An Estimate of Materials Needed for an Interior Renovation.



Item	Quantity	Estimate	L
<b>Exterior</b>			
<b>Windows: approx. \$150/window</b>			
32" x 31"		1	150
33" x 15" X 2		2	150
8' Bay		1	150
35" x 33.5"		1	150
51" x 30"		1	150
42" x 48"		1	150
45" x 44"		1	150
<b>Cedar Siding for two sides</b>	\$3.5 sq/ft		2000
<b>Metal Siding for two sides</b>			300
<b>Metal Skirting</b>			
12' x 12" = \$19.11	154 ft= approx. 26 panels		\$520
<b>Metal Roof</b>			
5v Galvanized Metal, 6' 7", \$15.97		62	990.14
Ridge Cap	14" x 10.4' = \$16, 7		112
<b>Misc.</b>			
Exterior doors \$25 ea		2	50
Insulation- wall		23 rolls	598
Insulation- floor		8 rolls	280
Ice and Water Shield			90
Screws + Fasteners			\$500
			<b>6490.14</b>
	Plus 10 %		<b>7139.154</b>

Figure 23. An Estimate of Materials Needed for an Exterior Renovation.

While these costs are certainly less than purchasing a new mobile home, there's a real question how a project like this could be financed. Very few mobile home owners have the type of cash on hand to finance a project of this type on their own. Orange County does not offer grants for mobile home renovations and traditional borrowing methods are generally not available for mobile home

renovations. For this to be feasible and scalable a non-profit or similar group would have to take this on.

During this process I went back to the creed that I created at the beginning of this process and the WELL Building Standards. Did this design meet both of those?

The proposed redesign is true to a mobile homes' shape and form and it does not change the original footprint of the mobile home. The cocoon structurally stands alone. This home is accessible, but to increase accessibility a ramp could easily be added to the exterior. Hallways were widened to increase accessibility as well, and there are no interior stairs. This home is affordable as it is less expensive to rehabilitate this home than to purchase a new mobile home. The proposed redesign emphasizes materials and uses materials like galvanized metal roofing on the cocoon and mobile home skirt, and interior materials like reclaimed wood and repurposed cabinetry and appliances are used to maintain affordability. I believe this home is thoughtful and will nourish its inhabitants and will be peaceful.

Looking at the WELL Building Standards, this design met its original goals with one exception: no new windows were introduced, and no windows were enlarged. The windows in Teresa and Kim's mobile home had been replaced in the 1990s and were in fair condition. To keep the budget low, I decided not to replace the windows. Additionally, the goal of increasing the windows was to

increase the connection between the home and the site. I believe that a cocoon accomplishes this goal.

Based on my photovoice participants interviews, as well as my interactions with Teresa and Kim, I believe the cocoon provides other additional benefits that are worth considering. The cocoon visually connects the mobile home to the history of rural vernacular architecture in the south. The cocoon loosely resembles a barn, and the strong gable and porch is reminiscent of early mill houses. It is possible that the cocoon also adds another layer of protection during storms and hurricanes. As mentioned, the cocoon protects the older mobile home from water and connects the home to its rural environment. If the rural environment is something that nourishes mobile home dwellers, the cocoon enhances that. The porch is wide enough for rocking chairs and a table. It gives folks a place to have friends and family over. In this way, it starts to address some of the issues around stigma. Visually, the form has been altered and the ubiquitous nature of the mobile has changed. No longer could you be in any mobile home, anywhere; the cocoon connects you to the specific site.

## CHAPTER IV

### PHOTOVOICE

This thesis uses a method called Photovoice. Photovoice is a PAR method that uses photos to capture aspects of an individual's daily experience and share them with others. Individuals take photographs around a subject or question, and then describe these photographs in either a written or oral form (Latz, 2017). For this Photovoice, participants were asked to take photographs to answer the question, "what makes your mobile home feel like 'home?'" This question was intentionally vague and open ended. When prompted, participants were told they could take photographs of items, animals, people, or spaces. One goal of Photovoice is to allow participants to choose how they are represented. This power, in turn, has the potential to destigmatize and empower participants.

The initial goal was to have three to five participants. The only requirement to participate was that you must live in a mobile or manufactured home in Orange County. I hoped to attract participants by offering a \$50 cash gift card as a thank you for participation. I first tried to find participants by handing out flyers that described the project and provided contact information. I dropped flyers in approximately 25 mailboxes of homes that I visually identified as mobile or manufactured. After a week I had received no responses. I decided that the flyers needed to be clearer about the cash incentive. I also added the UNC-Greensboro

and Interior Architecture Department logos to the flyer in the hope that this would make the project appear more legitimate. I dropped this new flyer in approximately 25 more mobile home mailboxes. Still, I got no responses.

In speaking with advisors and researchers, I realized that I needed to try a different method; that dropping flyers asking people to take photos of their homes could possibly be seen as too invasive. Perhaps, because it is a less traditional research method, Photovoice was viewed as strange or less legitimate. In research I've conducted in more urban settings, I've simply gone door to door to find participants. Once you are standing in front of someone, they are often more willing to engage or participate. In rural settings, however, it is considered taboo to knock on someone's door. I live down a long gravel driveway, and in the two years I have lived here, I have yet to have an unexpected visitor or guest. I would feel frightened or put off if I did.

I decided to try looking for participants on Facebook. There are many Facebook groups for people who live in different geographic settings. These are groups to share information about road closures, lost dogs, services, and to buy and sell. In my search I found Orange County Local (4500 members), Hillsborough NC Community Info (4300 members), and Mebane NC (10,000) members. I posted in each of these groups looking for participants. Through these postings, I found five people who were willing to take part in this Photovoice project. Many more expressed interest but did not follow up or stopped responding when pressed further. Two people got in touch to say that

they would be willing to talk to me but did not feel comfortable taking photographs of their home. One person wrote to me saying that they didn't like their mobile home and was ashamed of how it looked.

I electronically sent participants a consent form that explained the project and the process. The form also contained contact information for both me and my faculty advisor. Participants were advised that their photos and recordings would be used in this thesis as well as in a final exhibit at UNC-Greensboro. While I originally planned on sharing photos taken on my blog and Instagram account, I was advised that some participants might find this uncomfortable, so I decided against this. Then participants used their cell phones to take photos. Once photos were taken I scheduled a time to meet participants for the narration phase, so they could describe their photographs to me and I could take an audio recording. I met one participant at her home, two at the local food cooperative, and one at a coffee shop, and one at the library.

The next portion of Photovoice is ideation, where themes are pulled out and explored. For each participant I sorted through the photographs that were taken and ordered and organized the photographs. Photos that were blurry or hard to understand were not included. I listened to audio recordings several times to pull out relevant themes. These are shared below.

## **Michele**

Michele lives in a manufactured home outside of Hillsborough with her husband and family. Michele, who has previously lived in mobile homes, refers to her current home as manufactured or modular. The home is built on a doublewide platform and is about ten years old. She and her husband worked with a manufacturer to design and purchase the home. They both had children from previous marriages and they were drawn to the evenly divided spaces in their manufactured home. They didn't have to worry that one child was getting a bigger room than another; spaces were fair.

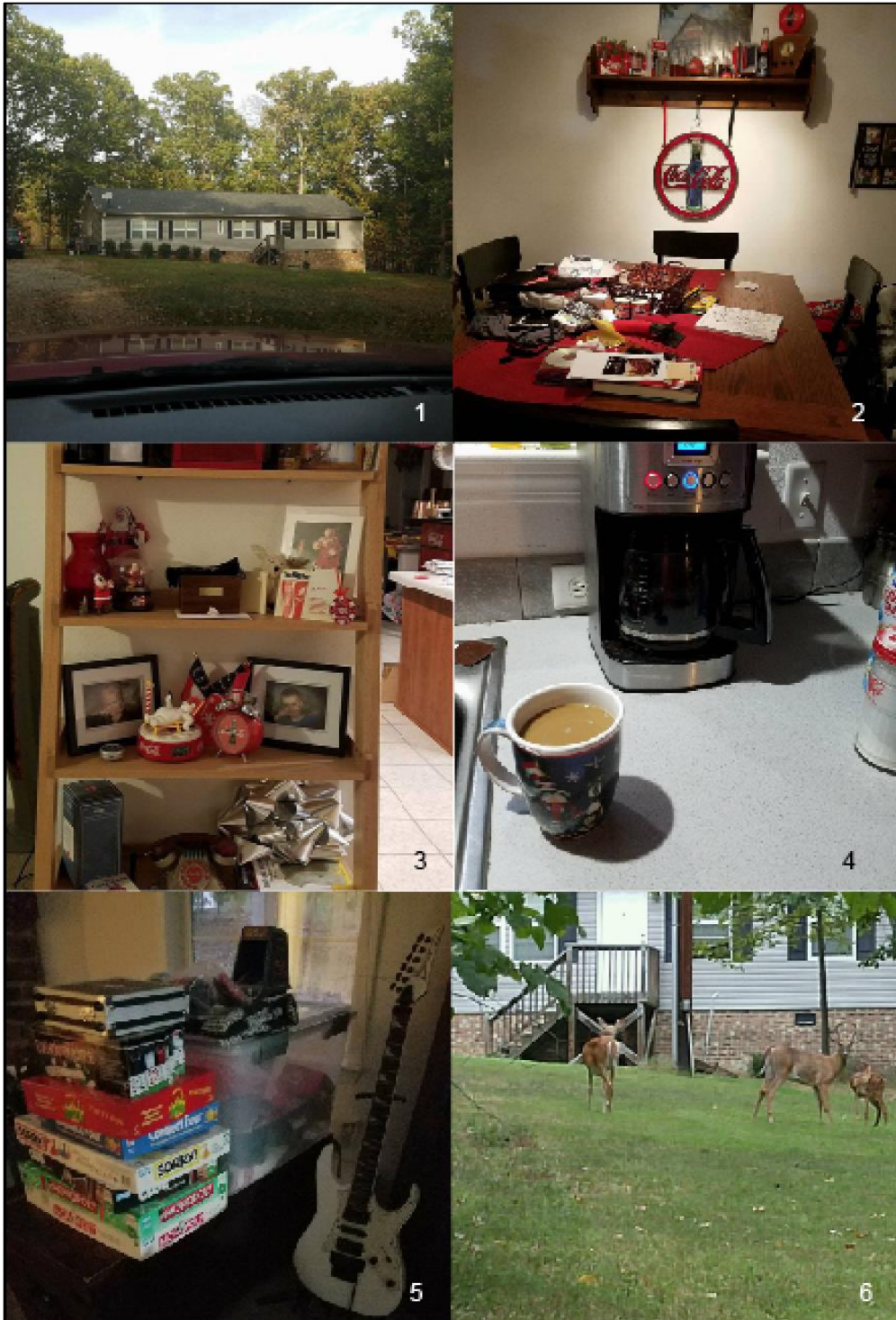


Figure 24. Michele's Photovoice.



She describes her first photo as the exterior of the home. For her, the feeling of coming home every day after work to a safe home, with her family inside, is an important one. The second photo is the family table “used to catch everything.” The third photograph shows “mementos and photos of our life as well as the ashes of the family dog who just passed away.” The fourth photo shows Michele’s morning coffee. She says, “Nothing says home like coffee that is the right temperature, the right sweet, and the right cream.” The fifth photo shows games and musical instruments played by one of Michele’s children. The final photo, again the exterior of the home, shows a pack of deer that shares Michele’s property. She says, “We have watched this herd for about a decade.”

Family is a major theme in Michele’s photos. In almost every picture, family features prominently, either family photos or the space where family gathers. Michele’s home gives her and her family a safe and sturdy place to gather and be close.

## **Carolyn**

Carolyn lives with her husband in a doublewide mobile home on several acres. The mobile home was originally her husband’s, and he purchased it new in 1985. Carolyn moved in fourteen years ago. Of the condition of the mobile home, Carolyn says, “It’s still going strong. We’ve done some remodeling. What do you do with older mobile homes? You fix them and keep them up to date. You keep working on them.”



Figure 25. Carolyn's Photovoice, Photos 1-6.

Carolyn spoke often of family in describing her photographs. Many pieces of furniture in her home have been passed down. Family photos are prominently displayed throughout. Describing photo eight, she says, "These are the salt and pepper shakers that belonged to my great Aunt Zela. This piece of furniture has been in my family since 1890-something. We always called it the gun cabinet. Now it's my husband's bill center."

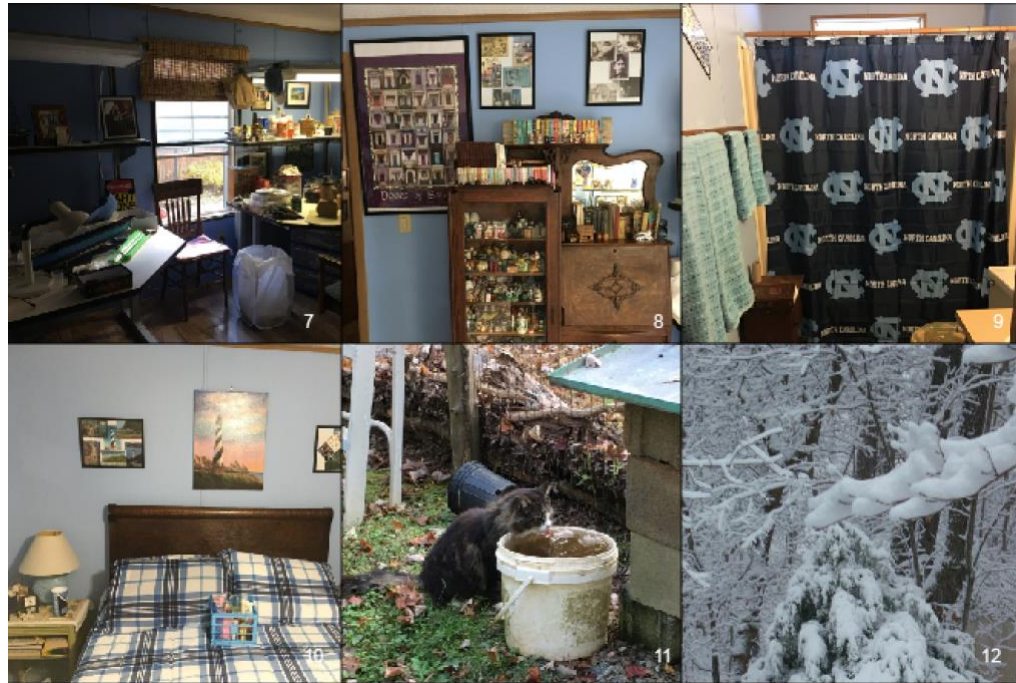


Figure 26. Carolyn’s Photovoice, Photos 7-12.

Once her daughter graduated from college and moved out, they redid her room into what they call, “The Carolina Room.” Carolyn loves this theme. She says, “Everything Carolina, not just UNC. Everything is blue. Everything in the frames are postcards. My grandmother had this huge postcard collections, hundreds of postcards, and I have all these boxes of postcards. I also have postcards. So I put all the Carolina postcards into frames and hung them on the walls.”

They also redid the guest room and turned it into Carolyn’s art studio. Of the process, Carolyn says, “We redid the whole room completely, put in new flooring, wood flooring, took out all the carpet. The flooring underneath was still brand new, no water damage, after all those years it was still great, so we just

put the new flooring down. My daughter kept a ferret in that room, loose, for five or six years, and still the floors were great underneath.”

The connection to the outdoors that their home provides is also important to Carolyn and her husband. She says, “The house sits very far back. We have two golf carts, we have trails. My husband rides them every morning. That’s his ritual, get up and drive around the property and relax.” They also have a large garden and both Carolyn and her husband grow their own fruits and vegetables. She says they grow, “tomatoes, cucumbers, cause I pickle the cucumbers and I can tomatoes, and he does collards. I don’t eat them, but he loves collards. We have a blueberry bush growing in there. We’ve tried corn, but the crows come and eat them.”

When I asked Carolyn if her home felt different than a site-built home she said it’s “no different, just on the outside. On the inside no, it’s still a home. We’ve lived in houses, we’ve lived in apartments, and this is no different. Once you’re inside it’s no different. You do repairs, you fix it. The walls are still there, you put up your things, and make it cozy. I love it. You surround it with your stuff. Family stuff.” This perfectly summarizes how Carolyn views her home. She has made it cozy and filled it with family stuff.

## Jennifer

Jennifer lives in a singlewide mobile home from the 1970s that is located in a trailer park. She lives there with her husband, two sons, two dogs, a cat, and a turtle. Before she lived in this home, she lived in a different mobile home. She says, "I have two boys...they share a room. Me and my husband have our room. They're getting older. One is ten and one is six. We can't stay there forever. We're outgrowing it, it's really small, about 800 square feet. We get to see a lot of each other."

Jennifer is a nursing student and her family lives in a mobile home because it is affordable. That said, she hopes that once she graduates, she'll be able to afford a site-built house. Jennifer and her husband purchased the mobile home for \$2800 and pay \$165 in rent each month as a "lot fee." She says, "We've been here about three years and before that we lived in another trailer when we first moved to North Carolina. We were there about a year...and before that we lived in another trailer for two years. I found that trailer living is super cheap and I'm in school...it's beyond affordable. We have savings because we don't have to spend \$800 a month on rent."

Jennifer's photos are mostly close up photographs of parts of her home that she likes with lots of photos of animals and family. Exterior photographs are noticeably absent. When I asked her why, she said, "It's kind of decrepit. It doesn't look very nice. But it's fine on the inside. It's livable. It's from 1970 and

it's an awkward blue color." Since they've owned it, they've only done work on the interior. Jennifer says, "The trailer's not in the best shape. We have had to do some work on it. There's stuff that needs to be done. We're only repairing the things that make it unlivable...as soon as I'm done with nursing school we're going to get a house." Her father did help them fix the front porch. Jennifer says, "Our porch was falling apart so my dad surprised us one day and fixed the boards on it. I would feel bad every time I ordered pizza. I was afraid someone was going to fall through the porch."

When I asked her what she didn't like about living in her home, she said, "The only thing I don't like is storms, tornado warnings...I've taken my family to the church so that we could be close to a stable building. That's the only reason I probably wouldn't live in a trailer for the rest of my life. I want something that I'm not afraid to be in if there's a storm."



Figure 27. Jennifer's Photovoice.

Jennifer describes photograph 2 as her study corner. She says, "This is my study corner. I put a couple little quotes to keep me motivated." She's taken over the kitchen table with her books and school work. She describes the kitchen as "really tiny," and says, "we used to eat at the kitchen table and pull it out every night, but it got to the point where I didn't have anywhere to study. So now we eat in the living room and when it's warmer outside out we eat on the picnic table outside."

Photo 9 shows the family's pet turtle. Jennifer says, "I was trying to get a picture of the turtle, but you can barely see him. The last time we were at Myrtle Beach, my husband was obsessed with getting a turtle, so we bought one." Photos 1, 11 and 12 show the family's new dog, Gadget, who they adopted from the local animal shelter. Photo 10 shows Jennifer's son. She says, "That's my youngest. I told him I wanted to take a picture of him and he posed, like this, eating his cereal."

Jennifer and I spoke about stereotypes and stigma associated with living in a trailer. She says, "I don't broadcast to everyone that I live in a trailer because there is...a stigma that comes with it, but the trailer park that we live in is really quiet and is mostly elderly people or people with families. I think that people who live in trailers are mostly just ordinary people." Jennifer uses the word 'trailer' to describe her home, and I asked her about this. She says, "It depends who I'm talking to...sometimes nurses or people who have a lot of degrees, they look down on it. There was this one nurse, and you know how people sit around and



talk, she was talking and the word 'trailer trash' came out. I don't say anything when people start talking like that. When I'm filling out applications I don't put 'lot 9,' I put number 9, because lot is only for a trailer park. I just don't tell a whole lot of people where I live unless I'm comfortable with them." As for the term 'trailer' vs. 'mobile,' she says, "Sometimes I say mobile home, I mean, but call it what it is. I could say modular, I could say mobile, I could say manufactured. But it's a trailer park."

Jennifer's photographs of her home, her animals, and her family are intimate, and it is clear that this is what home means to her. She also seems to view her home as a temporary resting place. It is offering her an affordable place to live while she is working on her degree. She brought up several times that she wants a bigger home and a site-built home to continue to raise her family in.

### **Jackie**

Jackie lives with her four boys in a modular home in West Hillsborough, NC. The home is constructed on a doublewide frame and has a permanent concrete masonry unit foundation. A front and back porch have been added. The house is 1700 square feet with three bedrooms. Jackie moved into the house less than a year ago. She moved from a site-built house with many acres, to this modular home, which sits on ½ an acre. When she looked at the home, she didn't realize it was a modular home. She says it just struck her as solid. When her realtor told her it was modular, she describes her first thought as being,

“trailer- is this not a good quality home?” She says, “I’m not an advocate for modular homes, but this is so well thought-out. It’s just easier space to live in. The light switches are all exactly where they should be. There’s nothing different than another kind of house. I feel like the design is just easy to live in. Doing laundry is easier, I don’t know why. Taking out the recycling is easier. This is the easiest house to live in. It’s easier to clean. It’s easier for me and my family.”

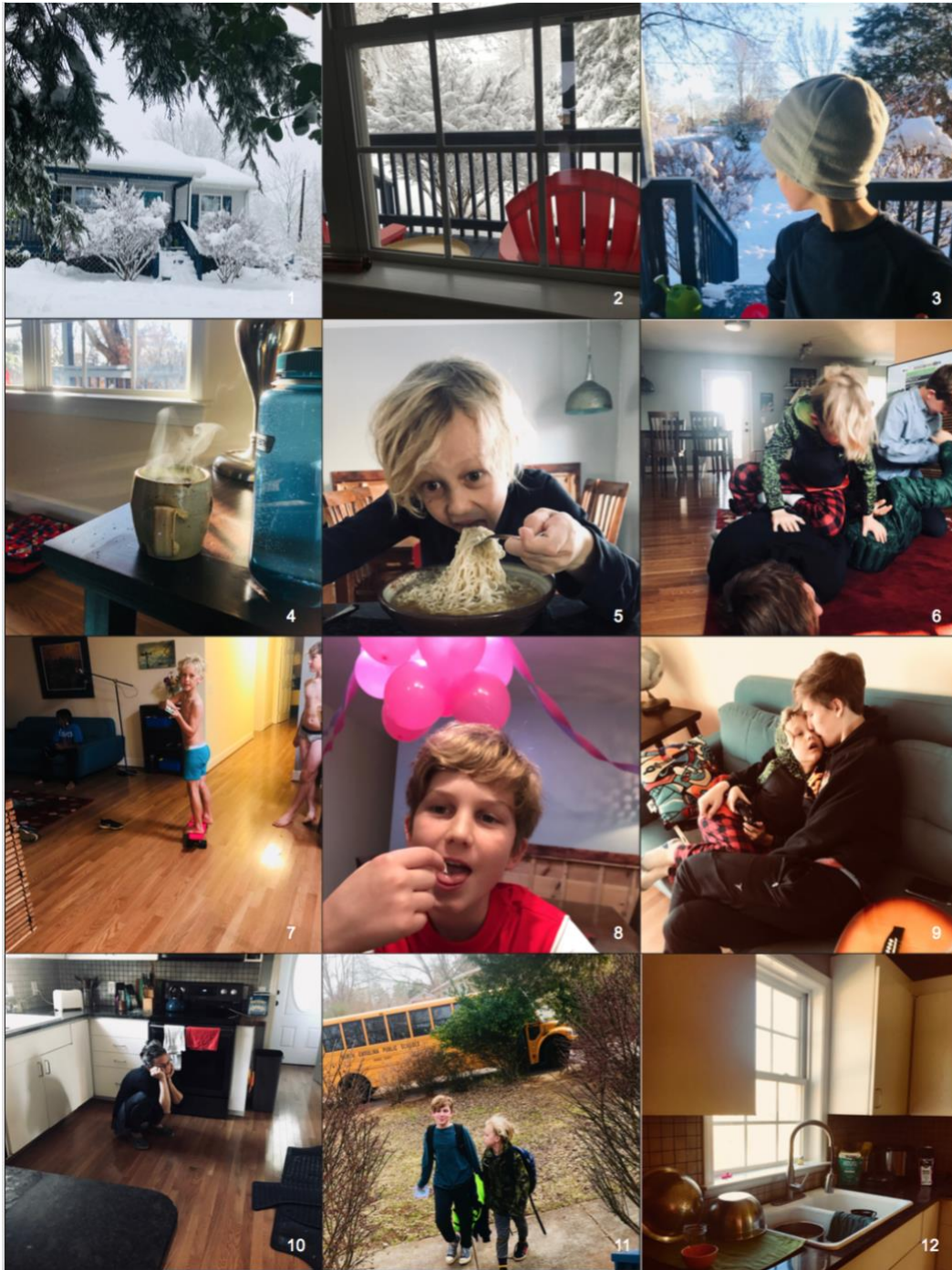


Figure 28. Jackie's Photovoice.

Jackie's first photo is from the recent snow. She says, "My neighbor measured 13 inches, we got a lot of snow." Photo 7 shows her youngest, Jesse. Jackie says the boys "have taken over the house. Jesse's holding birthday money." Photo 6 shows a wrestling match. Jackie says, the boys "are avid wrestlers. You can't tell but there are four of them in there beating on each other. Four boys you know? It's crazy. You adjust, but you never get comfortable around that energy. But it's really fun to watch. We've been here less than a year and the walls are stained, and the floors are scratched, and I like it. We live here. We're making our mark." Photo 8 shows a birthday celebration for Elliott. Jackie says, "We party here, we celebrate here. It feels like where we mark time. And this was his 11<sup>th</sup> birthday. It's just such a nice home. I love it here. It's just a great place to live. It's a great place for our family."

Photo 9 shows Jesse and Justice. Jackie says, "This is where the sweetness happens. Justice is a very sweet sixteen-year-old boy and he is very close with his baby brother Jesse. I find them in this pose all the time. This is our space, where we flow out of. We've been in a 900 square foot apartment before and it was so stressful and so hard. We didn't have enough space and it was affecting our daily life." Photo 10 shows a quiet moment. Jackie says, "I was just so fatigued. And it was like 'we live here'. And that was the middle of last semester, and I just stopped wherever I was and took a little rest, in the middle of the kitchen, and my son snapped a shot. There were mats in the kitchen that had

been there for like a couple months before I got around to cleaning them. This is where I rest.”

When I asked Jackie what she didn't like about her house she had a hard time naming anything. She said, “I've lived in so many houses and there's always been something wrong, but no, nothing I don't like here. I'm really grateful to be in this space. Being here is just easier. I needed life to be easier, it's was too hard, and this is the ticket. Is it really? It's a modular home, I say that to myself, and no one says that about modular homes.” I asked her if she thought mobile homes carried a stigma and she said yes. “I think it's like a trailer and a trailer has a stigma, like a poor person's home. It's not what people with money would do. But I didn't know. It just makes sense, it's easy and it's solid, it's just a solid house. I've been surprised, I couldn't believe it and I love it.”

## **Lori**

Lori lives in a doublewide mobile home on a permanent foundation. The two-bedroom, two bath home is situated on a little over an acre. Lori has lived in the home off and on since she purchased it in the early 2000s. She recently retired and is about to rent out the house, so she can travel more. Over the years Lori has done significant work on the house including installing a new well, all-new plumbing, and many cosmetic improvements. Lori says, “I've done a lot of the work myself. I laid the floor. I bought the house in 2000. It was built in '83 or '84. I've done all-new light fixtures, all-new floors, the bathrooms have both been

completely redone, I put siding on all of it, I put a screen porch on the back.”

When I asked Lori if she had been surprised about how mobile homes are constructed, she said, “It’s absolutely shocking, you’re expecting it to be much more well-built than it is. It’s not very well built. The 2 x 4’s are more like 1 x 3’s and they’re much farther apart than you expect them to be, and they almost always look like factory seconds. They’ll have big divots out of them. That was the first shocking thing when I pulled out a wall. It was amazing, I thought, ‘wow, it really is different’. The wallboard is not as sturdy as regular sheetrock, the quality of the construction is shocking. I love the piece of land it’s on, but if I knew then what I know now, I probably wouldn’t have bought a mobile home.

One thing that Lori does like about the home is the layout. “The layout is another thing I’ve always really liked,” she says, “It’s almost 1300 square feet. It feels very open. Each side has a bedroom and a full bath so it’s a very nice roommate situation. I think that’s really nice. You can close off your bed and bath.”

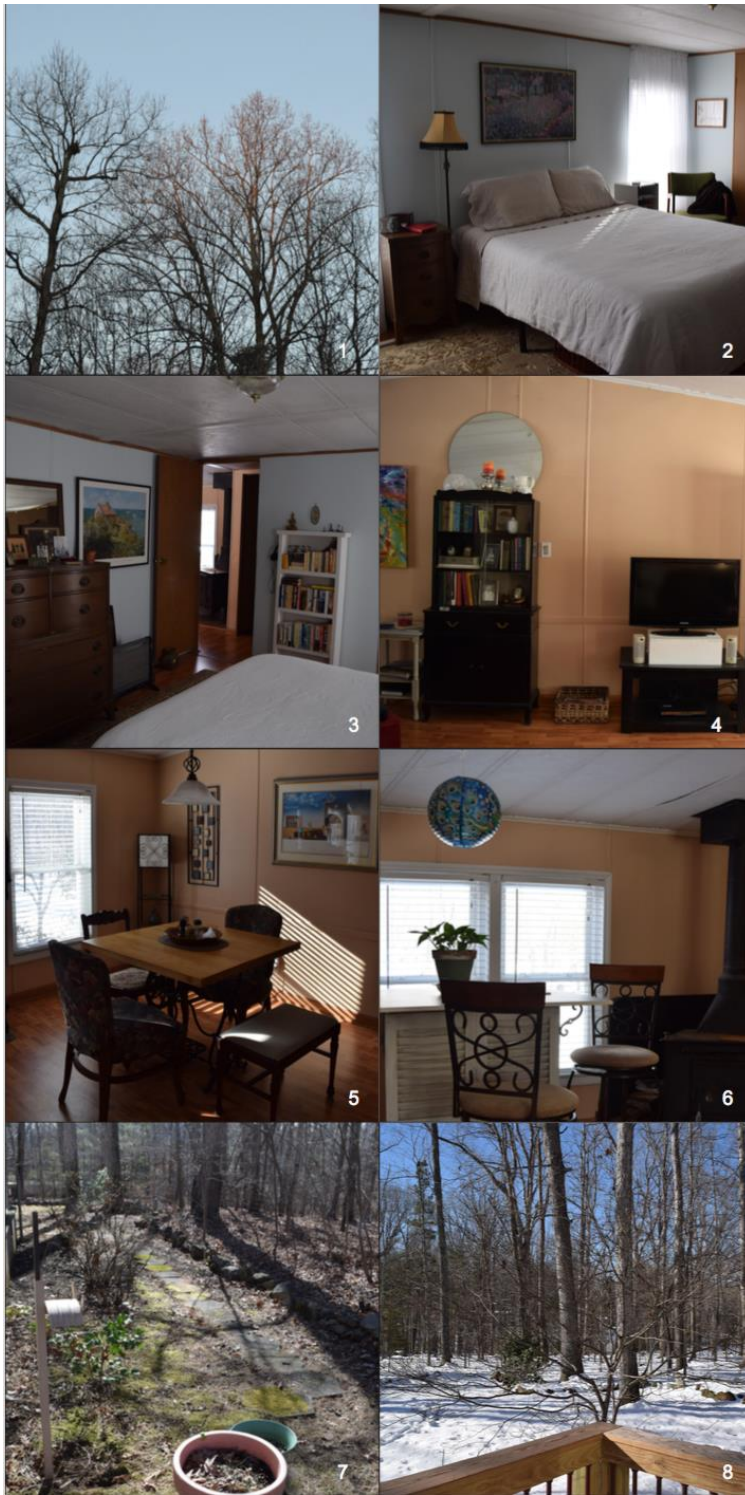


Figure 29. Lori's Photovoice.

In describing photo 3, her bedroom, Lori says, "I feel very at home there, very well-loved, and the linen sheets. It feels very peaceful to me. I like the color, I painted it myself." Photo 4, 5, and 6 are all from the main room which serves as a living and dining room and kitchen. She describes the room, "I don't love that color, I'm going to be honest. My younger sister painted it when she was living there. It's been fine as I've gotten older I've felt less need to redo things to be exactly how I want them. That's a little kitchen table area. It's basically all one big room." Photo 6 shows a bar that Lori recently built out of old shutters and some bookcases that a friend gave her. She says, "I like that picture right now because that bar is one of the most recent things I built. The wood stove we put in after the big ice storm in 2003." When I asked Lori about her minimal aesthetic that seems very thoughtful, she said, "I am always curating my collection of things. People who know me laugh at me, cause I'm always moving stuff around. I am interested in design. It's just always been a natural outgrowth. My favorite day is to stay around puttering around the house. I have no trouble if something doesn't serve me anymore to get rid of it and pass it along. I can let go of stuff okay. I've always been able to move through the changes as they occur."

Lori's favorite part of her home is the land that it sits on. This is what drew her to this house. Photos 1, 7 and 8 show the piece of property. Lori says "It's really wooded, it feels really private. Mostly the trees. That's the view from the front porch. I had a new front porch put on a couple years ago, and I have a lower deck as well. That gives you a feeling of how private it feels. A lot of the



property feels really private, that's what I really love about the house. I love the way the land feels." She continues, "I love it in all seasons of the years. The trees. I was surprised I could afford something that felt that private. I didn't have much money when I was looking. I was looking at stuff and I was like, 'I don't want to live there, I don't want to live there.' And here I was like 'yeah, I can live here'."

The list of the home's drawbacks is long. Lori says it has, "very low ceilings, like I can almost touch the ceiling and I'm very short. The middle room has a sloped ceiling and that's fine, but the rest of the rooms have 7' ceilings and that can tend to feel closed in, so that was another reason I always wanted light stuff. I don't have drapes." She also doesn't like "the shoddy construction. It irritates you every time you have a project to do. You remember that this is cheap trailer construction. It's not very energy efficient. The exterior walls all have insulation, the interior walls do not, so noise passes through really easily."

Overall, she describes the experience as mixed. On one side, she says, "The great thing about things not being built very well is that you have no compunction about changing them. Going in and tearing stuff up if you want to. Someone like me, who has no professional experience at all can do it." Lori says it's an experience of contrasts, "It's not loving the house as much as the land but loving the comfort of it all. At this point it's very comfortable to live there. To my friends and family, I call it the gilded turd, I mean that's what it is. I'll never get out of it what I've put into it. I'm never going to be able to get out of it what it provides

for me: which is either a really nice free place to live or an income stream. Like I said, being a comfortable place to live, everybody needs that, so it has that intrinsic value. With other houses it feels like they will go on, but this house, it came after me, and it might not make it after me. The things I don't like about it are about the house. The things I like are about the yard, the trees, the land, the garage. But you take your lumps and you say, 'this is the choice I made' and you make it work."

## **Analysis**

All five Photovoice participants were women. Four lived in manufactured homes in rural settings, one lived in a trailer park. Two lived in modular homes on permanent foundations, two in double wide mobile homes, and one in a singlewide mobile home. Age and class ranged quite a bit, but all participants were white. Terms used also varied. Mobile home, trailer, and modular home were all used to describe homes. Stigma was often discussed, and the idea that mobile homes were somehow "less than" their site-built counterparts was mentioned over and over. Some participants took photos of people, in others, people are noticeably absent. Almost every photo that Jackie took was of her kids. Jennifer, the participant who lives in a trailer park, took no exterior photographs, and said that she didn't like how her home looked. Neither do Lori's photos show the exterior of the home, but they do show the natural setting. While some participants spoke quite a bit of the projects they have done on their

homes, others didn't. What everyone had in common was an appreciation for what their homes provided: a place for them to move out into the world from; a place to raise kids or garden. Everyone I spoke to spoke of the negative aspects of living in a mobile home, but everyone also had a seemingly positive outlook and had figured out a way to make it work. Affordability seems key and that is indeed the reason that all participants lived in manufactured homes. Two participants, Lori and Jennifer, spoke of the challenges of resale value and worried that owning a mobile home was not a way to build equity. Lori and Carolyn spoke of the connection to nature and how much time they spent outside gardening or walking. While some participants spoke about the poor quality of construction, others felt their homes were very solidly built and impressed at how they held up.

The next phase in the Photovoice process is presentation and then confirmation. These photographs and audio recordings will be presented in a final MFA Exhibition at UNC-Greensboro in May 2018. Photovoice participants will be invited. As mentioned, the intention of PAR, and of Photovoice specifically, is to allow participants to choose how they are represented. In this case, the intention is to complicate a narrative around who lives in mobile and manufactured homes and to de-stigmatize this housing type. In many cases the photos shown above could be taken in any home. There are relatively few clues that these are all from manufactured, modular, and mobile homes.

## CHAPTER V

### CONCLUSION

I have written this thesis almost exclusively from the same chair in my home. I sit here and I look out, finding myself distracted by dogs, dirty dishes, and the gentle hum of the upstairs bathroom fan. As I have typed, the seasons have changed. In August, when I began this thesis, the woods were full and brimming with activity. Now, in February, they are barren and quiet. My gratitude for this home, which is safe, sturdy, and affordable, has increased with each page and each month. I have asked myself often, what makes this home feel like home. So many, many little things: the walls that I painted, the table that I built where I sit and write now, my dog snoring on the couch, my roommate chatting upstairs on the phone. And here there is a common thread: the life and the soul of this home are the people and animals that fill it.

I'm continually reminded that home is as personal as it gets. Each home is as different as we are. To some, home feels like family or new pillows purchased for a couch. To others, home is a cup of coffee and a moment of quiet. While standards can be helpful in designing spaces that place the person at the center, this should inherently be the focus of any design. We must design for people, for all people.

There were several limitations posed in this thesis and with my methodology. While my original desire was to have five PhotoVoice participants who live in mobile homes located in rural settings, this did not end up being the case. Two participants lived in modular homes on doublewide foundations, one participant lived in a singlewide in a trailer park, and two participants lived in doublewides in rural settings. I was limited by who was willing to participate. This also means that though there was a variation in economic class, all participants were women, and all were white. Another limitation of PhotoVoice is that the information is not generalizable. The insights and experiences that were shared with me through photos speak only to the individual's experience. Other limitations with this thesis included both time and money. The original intent was to purchase and then rehabilitate an older mobile home. Financially this was not feasible. Similarly, my desire to complete this thesis and my MFA in a two-year period, also made the intended rehab not possible.

While mobile homes have many flaws ranging from the materials they are constructed with, the financing available to purchase and renovate them, and the high utility costs due to low energy efficiency, they are homes for millions of Americans. Perhaps Lori said it best: It's the contrasts. It's the poor quality of construction and a home that feels like hers. The majority of PhotoVoice participants I spoke with said that they would prefer to live in a site-built home, however they loved how affordable their mobile home was.

Several participants described shock at the materials mobile homes are constructed with. While older homes can be reinsulated, constructing new exterior walls out of more solid materials, like 2 x 4's, amounts to starting from scratch, as the TrailerWrap precedent showed us. Changes can be made to make them more structurally sound and efficient. Given the resources, older mobile homes can be renovated and can be renovated for less than the cost of a new mobile home. That said, there is no current system to finance significant renovations of older mobile homes. Unless owners are able to finance these projects themselves or use equity from other homes, they generally cannot borrow using traditional means for these renovations.

Across the country, there are examples of towns and municipalities that have small grant programs for renovations. The city of Westminster in California has a small grant program that gives eligible mobile home residents up to \$10,000 for repairs. Repairs can include “eliminating code violations, substandard conditions, and health and safety issues (e.g. roofing, plumbing, electrical, heating, flooring, painting)” (“Rehabilitation Grants for Mobile Homes”). All repairs must be done by a licensed contractor. The City planned on granting 100 grants during the 2014-2016 cycle. To be eligible for the program individuals must own their mobile homes, the home must be located within the city limits and owners must meet income eligibility guidelines. For a single person their income cannot exceed \$54,600 and for a family of four, their income cannot exceed \$78,000. The funding for this program comes from Housing Authority Funds. The

county of San Diego runs a similar program, though their grants are up to \$12,000 and their income requirements vary slightly. This is one possibility though these grants cover smaller renovations, not the large-scale rehabilitations that many older mobile homes require. Also, every mobile home owner that I spoke with did work on their home themselves. This allows money to go further. The two grant programs above require licensed contractors to do all work. Further research is needed to understand if a similar program is viable in North Carolina.

Throughout this process I've wondered if we need a new model for affordable housing in rural areas. Did the TrailerWrap students have it right when they demolished their 1960s trailer down to the chassis? Similarly, do we need to scrap mobile homes altogether in favor of a solution that is constructed to last 100 years and that is built with good quality materials? And then I remember that this is the system that we have. This system includes manufacturers, and dealers, and financing, and millions of existing mobile homes. What do we do with these? Do we let them fall into the ground, or do we rehabilitate them? This thesis stems from a desire to work within this system to see if we can improve it.

In the future I hope to continue my work and my study of mobile homes. I hope to continue to collaborate with dwellers, academics and professionals. Throughout this process I've been inspired by the people I've met who working to do just that: professors, and journalists, and economists, but above all, individuals and family members who call mobile homes, 'home.'

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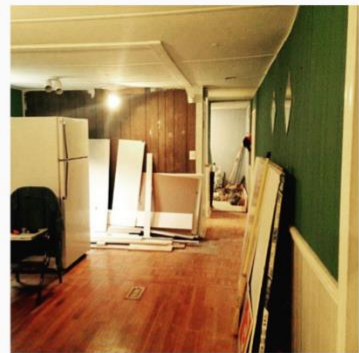
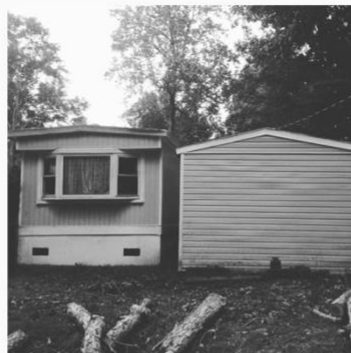
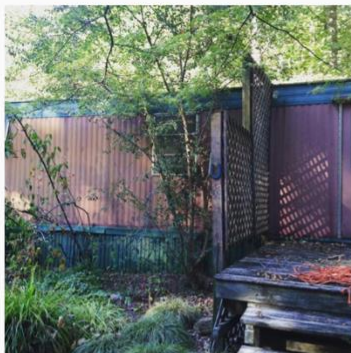
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APPENDIX A  
INSTAGRAM ACCOUNT





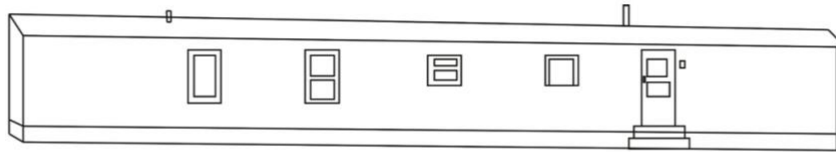


## APPENDIX B

### PHOTOVOICE CONSENT FORMS AND FLYER

# ReMobile Home

# PhotoVoice Consent



---

Investigator and Faculty Advisor: Emily-Kate Hannapel, MFA Candidate, Interior Architecture  
Travis Hicks, Associate Professor, Interior Architecture

**Participant's Name:**

**What are some general things you should know about photovoice projects?**

You are being asked to take part in a photovoice project. Your participation in this is voluntary. You may choose not to join, or you may withdraw your consent, for any reason, without penalty. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro.

Details about this photovoice project are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this photovoice project.

You will be given a copy of this consent form. If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below.

**What is the project about?**

This is a photovoice project about mobile homes. The purpose of this project is to understand how individuals experience living in a mobile. Your participation is voluntary. Photovoice is a process by which people use photographs to capture aspects of their environment and experiences and share them with others.

**Why are you asking me?**

You are being asked to participate because you are an adult whose primary residence in a mobile home in North Carolina.

**What will you ask me to do if I agree to be in the study?**

During the first session you will sign this consent form and get oriented to the project. You will be asked to take photographs that answer the question "What parts of your mobile home, make it feel like home?" A camera will be provided to you, or if you have one, you can use your cell phone

camera. Photographs can be taken inside or outside, and can be of people, animals, or tangible objects. You may take as many photographs as you like, but please take at least ten. You will have approximately a week to do this. The second session is a reflective interview where the investigator will make an audio recording of your description of your photographs. Your photographs and audio recording will be used in Emily-Kate Hannapel's thesis. Only your first name will be used to identify you.

**Is there any audio/video recording?**

An audio recording will be made while you describe your photographs. Audio recordings and photographs will be used in the thesis.

If you have questions, want more information or have suggestions, please contact Emily-Kate Hannapel and Travis Hicks who may be reached at (919) 698-9041 or e\_hannap@uncg.edu and tlhicks@uncg.edu.

**Will I get paid for being in the study?**

You will receive a \$40 cash gift card.

**How will you keep my information confidential?**

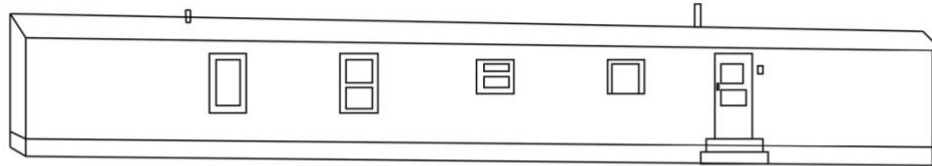
Only your first name will be used in the thesis.

**Voluntary Consent by Participant:**

By signing this consent form/completing this survey/activity you are agreeing that you read, or it has been read to you, and you fully understand the contents of this document and are openly willing consent to take part in this photovoice project. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate, in this study described to you by Emily-Kate Hannapel.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# Do you live in a mobile home?



---

## Volunteers needed for a project that studies mobile home design

### Who?

Adult volunteers whose primary residence is a mobile or manufactured home in North Carolina

### What?

I'm a graduate student at UNC-Greensboro studying mobile homes and how they can be renovated so they will last. You'll be asked to take photographs that answer the question "What makes your mobile home feel like home?" Your participation requires two sessions where you'll take photos of your home. Your photographs and audio recording will be used in a Graduate thesis and on a blog and Instagram account.

### Where?

You will take photographs at your home and the audio recording will also be done at your home.

### Benefit:

You will receive a \$40 cash gift card.

**Interested? Have additional Questions? Please contact Emily-Kate Hannapel: [e\\_hannap@uncg.edu](mailto:e_hannap@uncg.edu) or (919) 698-9041**





APPENDIX C

FACEBOOK SCREEN GRABS

**Emily-Kate Hannapel** ▸ **Hillsborough NC Community Info** ...  
3 October 2017 · 🌐

Hi! I live in **Hillsborough** and am a student at UNC-Greensboro studying mobile home design. I'm looking to talk to folks who live in mobile or manufactured homes in Orange County. Is anyone willing to talk to me about your home? Or do you have friends, neighbors, or family you can connect me with? Direct message me or send me an email at [e\\_hannap@uncg.edu](mailto:e_hannap@uncg.edu)

👍 7 3 Comments

👍 Like      💬 Comment      ➦ Share

---

 **Statler Gilfillen** All thought different than a manufactured Mobil home, you might check out the design of Tiny Houses which are typically on wheels but are increasingly being looked as a small version of a mobile home. This is a web page about this years Tiny House conference: <https://enovillage.wordpress.com/tiny-house-conference/>

 **THOUGHTS ON ALTERNATIVE HOUSING**  
ENOVILLAGE.WORDPRESS.COM

👍 1  
Like · Reply · 21w

 **Bruce Wilcox** There's an Elon grad, and social entrepreneur in the Burlington area working on an affordable Tiny Home project in Burlington. He has sourced the land (as a gift from the City) and is working with App State (which does studies of Tiny Home designs) to... [See more](#)

👍 1  
Like · Reply · 20w

 **Polly Dornette** I sent you a pm

Like · Reply · 20w



**Emily-Kate Hannapel** ▶ **Mebane, NC**

15 January ·



Hi all! I live outside of Hillsborough and am a graduate student at UNC-Greensboro studying mobile home design. As part of my thesis I'm asking folks who live in mobile homes to take photos to answer the question "what makes your home feel like 'home?'" Photos can be inside, outside, animals, objects, anything really. Any folks in this group who live in mobile or manufactured homes willing to participate? Participation would take 1-2 hours of your time and you would receive a \$50 cash gift card. Private message me or send me an email: e\_hannap@uncg.edu.



3

1 Comment



Like



Comment



**Myra King Davis** We live in a small double wide on the south end of Mebane Oaks Rd...

Like · Reply · 5w



**Emily-Kate Hannapel** was looking for recommendations. ⋮

3 October 2017 ·

Friends! I need your help- looking to chat with folks in Orange County who live in mobile or manufactured homes. Do you have any friends, family, or neighbors who do, that you'd be willing to connect me with? Many thanks!



Looking for recommendations in  
**Orange County, North Carolina**

We'll add recommendations to your map.



Like



Comment



Share

Laura Cole, Lauren Nichols and 2 others



**Chas Edens** i know some folks in a mobile home park. Does that count, or are you only referring to the school buses and tiny homes variety?

Like · Reply · 20w



**Emily-Kate Hannapel** Chas Edens looking for folks who live in mobile homes, but not in mobile home parks (and not tiny homes/school buses). Let me know if you know anyone.

Like · Reply · 20w



**megan. alise. carroll.** Are you on the Chatham chatlist- might be worth asking there? (Also just in Orange?)

Like · Reply · 20w

## APPENDIX D


### BLOG POSTS

2/27/2018 Why are there so many abandoned mobile homes? | remobilehome [Create Your Site](#)

---

# Re.Mobile Home

---


[HOME](#) [ABOUT](#) 

## Why are there so many abandoned mobile homes?

August 23, 2017

Driving the backroads of rural North Carolina it is not uncommon to see mobile homes that are visibly abandoned sinking into the ground. They often strike me as both eerie and beautiful with their doors flung open, trees growing through the windows, roofs caved in, and toys or other possessions still in the yard. The earth seems to be taking them back. As I drive by I wonder about the folks who called this place "home," and the promise that it may have represented. Why is this such a common sight in rural NC, and how many abandoned mobile homes exist in NC?



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<https://ekhannapel.wixsite.com/remobilehome/single-post/2017/08/23/Why-are-there-so-many-abandoned-mobile-homes> 1/2

2/27/2018

### Why are there so many abandoned mobile homes? | remobilehome

The answer (like most) is multi-faceted. According to an estimate from the NC County Commissioners, in 2000 there were approximately 40,000 vacant or abandoned mobile homes, and that number is expected to double by 2020. I've been unable to discern how this number was calculated and anecdotal evidence suggests that the number of vacant or abandoned units has increased significantly post-housing crisis, and there may be many, many more abandoned mobile homes.

Mobile homes are expensive to move and only a very small number of mobile homes are ever moved. According to a mobile home mover in the area that I spoke to, the cost of moving and disposing of a mobile home starts at \$3,000 and can go upwards of \$10,000. Size, condition, and location of the mobile home are all factors in determining the cost. Because of the high cost of removal, once abandoned, mobile homes are often left in place indefinitely. And unlike site built homes, mobile homes rarely appreciate in value. In North Carolina, unless wheels are removed and skirting is installed, mobile homes are classified as personal property rather than as real estate. This creates financing challenges, and makes low-interest loans or grants nearly impossible to come by. Because of this, it is often a better financial decision for folks to walk away from a mobile home that is in poor condition than to repair it. Many mobile homes are also not road-worthy, making it more challenging to easily dispose of.

Some counties are trying to counter this problem by removing and disposing mobile homes. Both Alamance and Rockingham counties have grant programs to safely remove abandoned mobile homes. These counties view abandoned mobiles as both a safety concern and an eyesore. Since 2013, Alamance County has removed and recycled dozens of abandoned mobile homes.

What other options are for vacant or abandoned mobile homes? I'll share some other solutions in the coming weeks.

### It's a wrap!: a site model and a rendering

November 14, 2017



### ReMobile Home Thesis Abstract

November 14, 2017

I don't often (i.e. never) share chapters or parts of my thesis on this blog, but I thought it might be helpful to share my thesis abstract (i.e. summ...



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### #TAGS

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2/2

# Re.Mobile Home

HOME ABOUT 

## The Promise of Cooperative Models

August 16, 2017

I've spent the summer traveling far and wide across both North Carolina and the East Coast. I did a summer internship with a historic preservation contractor, mostly working in historic cemeteries. We worked in Raleigh, Fayetteville, New Bern, and Beaufort. I saw many mobile homes that were interesting and unique and I was able to photograph some which you can see these on my Instagram account. Fifty-five percent of all manufactured homes are located in the South, and it was not surprising that I saw many fewer mobile homes and mobile home parks during my trip to the Northeast. That said, many mobile home parks in the Northeast have embraced a new and promising concept: a cooperative model of ownership.

Cooperative models for mobile home park ownership have been in the news lately. In December, NPR did a piece on the opportunities of cooperative models and in 2012 they published a piece on ROC USA, an organization that helps mobile home park residents organize and buy the land on which their home sits.



So what is a cooperative model of ownership? While many manufactured home dwellers own their home, they often rent space in parks from a landlord. These are called land-lease agreements. These agreements give power and control to park owners, who often use this power to charge for extra services (grass cutting, sewer, water, etc.) and excessive rent increases. It is very difficult and expensive for mobile home dwellers to move their homes, so when they are unhappy with conditions, they often feel as if they have few options. Costs to move a manufactured home can exceed \$10,000, resulting in few very homes being moved (only about three percent of mobile homes are ever moved). Cooperatively owned parks form non-profit governing boards of residents who decide how parks should be managed. Residents decide how to control rents, ensure their community continues to

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<https://ekhannapel.wixsite.com/remobilehome/single-post/2017/08/16/The-Promise-of-Cooperative-Models>

1/2

2/27/2018

### The Promise of Cooperative Models | remobilehome

It is estimated that less than one percent of mobile home parks are cooperatively owned. Paul Bradley, President of [ROC USA](#), says "He who controls the land, controls the future. We fundamentally believe that homeowners ought to control the land underneath their homes." In part because of ROC USA's success, twenty percent of all mobile home parks in New Hampshire are now resident owned. This model is incredibly promising, however according to ROC's [map of the cooperative communities](#) they've assisted, there are very few in the South. I want to explore this more this upcoming semester. Do you know of any cooperatively owned mobile home parks in North Carolina, or other southern states? If so, please get in touch!

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2/2

# Re.Mobile Home

HOME ABOUT 

## What's the difference between a tiny house and a mobile home?

May 11, 2017

I've spent this year trying to figure out what I wanted my thesis to be. There are so many things that I want to study and narrowing it down to one idea felt impossible. So I created three criteria for potential thesis topics:

1. My thesis needs to be about making. Making is how I understand the world and my place in it. To me, making is research and I want my thesis to be centered around making.
2. I want to reach outside of academia. This work needs to be relevant and applicable to my broader community.
3. It should have a social justice component to it. I would love to spend this time furthering some aspect of the affordable housing conversation.

I shared this criteria with a professor and mentor, and he asked, "Why not build a tiny house?"

I cringed when asked the question.

I have a general wariness around tiny houses and the movement they have inspired. So I asked him: "Why not a mobile home?"

He went on to discourage the idea, which of course, just made me more interested.

"But what's the difference between a tiny house and a mobile home?" I persisted.

He didn't have an answer.

So what is the difference? Poor folks have been living in small spaces forever; shared houses, mill houses, shacks, and mobile homes. These are the spaces that our cities use ordinances and planning to prevent, to push outside their borders.

But then, why are tiny houses cool? Why do they have television shows and blogs and books devoted to them? Is the difference who lives in them? How they are constructed? The way they are zoned? Yes.

To me, tiny houses glorify poverty. Living in a tiny house is about intentional minimalism, living without. Tiny houses are an option, a choice, a privilege.

How do I know that? I've already designed and lived in one.

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1/3



2/27/2018

What's the difference between a tiny house and a mobile home? | remobilehome



400 square feet of minimalism. All the amenities a person could hope for, neatly arranged so it feels spacious yet efficient. The Lil House was designed as a backyard micro dwelling that would be rented out and serve as an investment property. Permitting was a constant challenge - our building codes aren't designed for small spaces or alternative building styles. Financing was also challenging.

I also spent eight months living in an 144 square foot tiny house (really a bathhouse). I slept in a loft and would wake up from nightmares where I was stuck or trapped in a confined space. Even Ruby the Dog thought 144 square feet was too small (she slept next to the bathtub). There is a space for tiny houses, but I don't believe it's the solution, or even, a solution, to affordable housing.



# Re.Mobile Home

HOME ABOUT 

## Do you see mobile homes?

May 22, 2017

When I drive from my house in rural Orange County to town, I count mobile homes. I pass mobile homes with vegetable gardens in the front, mobile homes that have screen porches and decks added to them, mobile homes that are clearly abandoned, slowly sinking into the ground. I usually get to about twenty before I lose count.



Where I live, this is what affordable housing looks like. When lots of folks imagine affordable housing, they think about urban affordable housing: tall, dense buildings. However, mobile homes are the largest source of unsubsidized affordable housing in the country. A mobile home is what affordable

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2/27/2018

Do you see mobile homes? | remobilehome

But then why are they so rarely a part of the affordable housing conversation? Why don't we see them? Why didn't I see them?

Perhaps most obviously is location. Local laws govern where mobile homes can and cannot be placed. Many cities specifically do not allow mobile homes within city limits. This pushes mobile homes and mobile homes parks to the outskirts of towns. In Durham, NC mobile homes are only permitted in areas that are rurally zoned. This means that when I lived in Downtown Durham, mobile homes weren't a part of the landscape because legally, they aren't permitted. I didn't see them, because they didn't exist in my neighborhood.

When I moved to rural Orange County, I started seeing them everywhere. In Orange County, there are approximately 5,000 mobile homes, and roughly half are located in a mobile home parks. Of this number, it's estimated that a little more than 800 are vacant or abandoned. Zoning and planning are to play here: I see mobile homes because they are legally allowed to exist on any lot in the county.

The less obvious answer to this question has to do with how we see and interact with folks and places outside of our socioeconomic class. Whether we see these places, or whether we avoid them and look past. I partially wonder if I also don't see mobile homes because I have been taught not to value them. In Interior Architecture School I am trained to see and appreciate building styles. This is especially true in my historic preservation coursework. I've been taught to recognize craftsman style columns, and prismatic glass; Italiante, Victorian, Colonial and Greek Revivals homes. All architectural styles of the upper echelons. I haven't been trained to look or evaluate mobile homes, to view them as distinctive homes that tell important stories and histories.

So now I'm trying to train myself; to hear some of these stories, and rethink how mobile homes house so many folks in this country.

### It's a wrap!: a site model and a rendering

November 14, 2017



### ReMobile Home Thesis Abstract

November 14, 2017

I don't often (i.e. never) share chapters or parts of my thesis on this blog, but I thought it might be helpful to share my thesis abstract (i.e. summ...

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