
Factory-Built Construction and the American Homebuyer: Perceptions and Opportunities



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Factory-Built Construction and the American Homebuyer: Perceptions and Opportunities

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Disclaimer

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Executive Summary

Factory-built housing, which includes modular, panelized, and manufactured homes, increasingly allows homebuilders to provide consumers with homes that are less expensive than site-built housing without sacrificing a home’s quality or aesthetic appeal. Yet, such homes represent only 21 percent of housing starts in the United States. This study assesses the general public’s knowledge and perception of site-built and factory-built housing. This information is useful for identifying what public perception barriers there are to more widespread adoption of these more affordable construction techniques and what education and marketing strategies could be used to overcome any identified barriers.

The U.S. Department of Housing and Urban Development (HUD), as part of its mission to promote affordable housing options, funded a study conducted by Optimal Solutions Group (Optimal) to collect information about consumers’ perceptions of four housing types: site-built, modular, manufactured, and panelized. Optimal collected this information in two surveys of a total of nearly 12,700 consumers: 10,000 through a Web-based survey and the remaining 2,700 in a telephone survey. Both surveys included questions about the respondents’ familiarity and attitudes toward all four housing types. The Web-based survey asked respondents to react to pictures of different types of housing which did not include a description of the housing itself, the telephone survey asked respondents about the four housing types. This technique allowed for analyzing the extent to which respondents’ attitudes to a picture of a given type of housing, without knowing how it is constructed, is different from respondents who do not see a picture of a given housing type.

Consumers’ Familiarity with Different Types of Housing

Respondents are generally familiar with site-built, modular, and manufactured homes: 63 percent of Web-based survey respondents said that they were somewhat familiar or very familiar with site-built homes; 53 percent of respondents indicated that they were either somewhat familiar or very familiar with manufactured homes. Consumers are less aware of modular homes: 42 percent of Web-based respondents said that they were either somewhat or very familiar with modular homes. Consumers are not generally aware of panelized homes: almost 7 out of 10 respondents are unfamiliar with them.

Telephone survey respondents were generally less familiar with specific factory-built housing types than the Web-based respondents. With the exception of panelized housing, Web-based respondents’ mean choice on the five-point familiarity scale is higher (which means they were more familiar) than the telephone survey respondents (table ES-1).

Table ES-1: Mean scores of familiarity with different types of housing: telephone survey and Web-based survey

Housing type	Telephone survey		Web-based survey		T-statistic	P-value
	Mean	Standard error	Mean	Standard error		
Site-built	2.99	0.03	3.69	0.01	-18.69	<0.0001
Manufactured	3.16	0.03	3.47	0.01	-9.52	<0.0001
Modular	2.92	0.03	3.14	0.01	-6.91	<0.0001
Panelized	1.58	0.02	1.61	0.01	-1.26	0.20

Source: Optimal surveys of consumers

What factors influence a consumer's awareness of a particular housing type? Although income and educational attainment are important, the key finding is that respondents are most familiar with home types in which they have already lived. In other words, respondents who said that they had lived in panelized housing were more likely to be aware of this type of home.

Consumers' Attitudes toward Different Types of Housing

Respondents to both the Web-based and telephone-based surveys rated site-built housing most favorably. Overall, such housing was rated highest with respect to resale value, overall value, availability of financing, quality of surrounding neighborhood, ability to quickly construct with varied design features, quality of construction, and the impact on the look and feel of the home. Modular and panelized homes were rated on these factors by respondents to be slightly below that of site-built housing. The ratings for these two types of homes were nearly identical to each other. This finding suggests that consumers see little difference between modular and panelized housing. Manufactured housing, based on specific housing factors, is rated below the other three housing types.

These ratings are similar across respondents' income, educational attainment, and location. However, respondents who lived in a particular type of home tended to rate that type of home more favorably. In other words, respondents who lived in manufactured housing rated that type of housing more favorably than the overall sample. The same is true for respondents who lived in modular and panelized housing.

Telephone survey respondents rated manufactured housing more favorably than Web-based respondents. This result is somewhat surprising, since some literature suggests that consumers have a pejorative view of the term "manufactured housing," and so would rate a picture of a manufactured home more favorably. The findings suggest that this is not the case: for every factor, telephone respondents rated manufactured homes more favorably than the Web-based respondents to manufactured home photographs. Telephone respondents also rated modular and panelized homes more favorably than did Web-based respondents.

Consumers' Likelihood to Purchase Different Housing Types

Site-built housing, in addition to receiving the highest ratings against particular factors, is the type of housing that respondents would likely purchase, followed by modular homes. Respondents indicated that they are about equally likely to consider panelized and manufactured homes for purchase.

In general, respondents who lived in site-built housing prefer that type of housing to all of the three other types, and so would be less likely to consider purchasing a modular, manufactured, or panelized home. Lower income respondents are more likely to consider purchasing a manufactured home, as are respondents who value the ability to construct a home quickly. Lower income and older respondents are more likely to consider purchasing a modular home, as are respondents who live in the Northeast. Moreover, respondents who are knowledgeable about factors associated with each housing type are more likely to consider purchasing modular and panelized homes.

A key result in this study is that the telephone respondents who rated non-site built housing types more favorably based on specific housing features were less likely to consider purchasing these homes. In comparison, Web-based respondents who rated the homes based on photographs of each housing type decided favorably on the likelihood to purchase them. Why would respondents rate a particular type of house more favorably, but be less likely to purchase it?

This finding suggests that consumer willingness, (or lack thereof), to consider purchasing a factory-built home is less a function of rating individual elements than the overall look of the home. It may be that the Web-based survey respondents, based on their reactions to a photograph of a particular type of home,

thought more highly of that home than the telephone respondents, who based their reaction on their predetermined understanding of each type of housing.

Implications: How Might Factory-Built Homes Be Marketed to Consumers?

The marketing strategies presented below are based on the results of both surveys and provide actionable strategies for potentially enhancing consumer interest in modular and panelized housing. Based on the attitudes of respondents, the marketing recommendations are derived from the following key principles:

- Quality of construction is important to respondents.
- There is a distinction between respondents' product knowledge and product experience.
- A marketing message and its medium of delivery should target those markets that show the greatest promise for non-site-built housing technologies.

Among all the factors, the quality of construction is the most important to consumers when considering a new home: 92 percent of respondents said that construction quality was very important. As a result, an effective marketing strategy is to emphasize similarities in the quality of construction of modular and panelized homes to those of site-built homes. One method for accomplishing this is to develop marketing materials that incorporate final-product photographs of site-built homes juxtaposed to modular and panelized homes so that potential buyers can see that, in most cases, there are no visible differences in the quality of the homes. Further, examples can be highlighted of how builders that are known for their quality of construction are transitioning between site-built and modular and panelized construction (for example, Pulte Home Sciences).

Marketing strategies can be effectively delivered using a combination of interactive messaging strategies and media. This approach is consistent with the variation observed in the likelihood to purchase site-built housing compared to modular and panelized housing. There are smaller differences in the Web-based survey respondents' likelihood to purchase a particular type of home: 55 percent versus 9 percent. For telephone respondents, the percentage that indicated they would definitely consider purchasing a particular type of housing ranged from 77 percent to 8 percent.

The implication is that marketers could capitalize on the similarity of modular and panelized housing to that of site-built housing by showing side-by-side photos of these various housing types in their "ready to move in" state (for example, landscaped). Further, the quality of construction factor could be reinforced with comparable text regarding the advantages inherent in employing controlled construction practices and environments rather than explicitly showing or explaining how the construction is conducted in a factory. This type of information could be included in a fact sheet entitled, for example, "So you think you know about modular and panelized housing."

Also marketing efforts should be targeted to consumers who are most likely to be familiar and have a high likelihood of purchasing different factory-built housing types. In general, lower-income respondents are most familiar with non-site-built housing and are more likely to consider purchasing a manufactured home. This suggests that marketing strategies to promote factory-built housing should be focused to consumers who are now living in manufactured housing and based on their profession are likely to increase their income and so enable them to upgrade to modular and panelized housing. Since these consumers are already familiar with non-site-built housing, they are likely to consider purchasing such homes as their incomes increase. Marketing efforts related to modular homes could be directed to consumers older than 40, since this age group has a higher likelihood to consider this type of housing.

1. Introduction

Factory-built housing presents an opportunity for homebuilders to provide consumers with homes that are less expensive than site-built housing without sacrificing quality or aesthetic appeal. Indeed, factory-built housing production techniques have improved such that some homebuilders are providing consumers with modular housing units (a type of factory-built housing) sited side-by-side with stick-built housing, and these units are indistinguishable from one another (*The Washington Post*, December 11, 2004).

Although factory-built housing has potential to offer consumers more affordable housing opportunities, such homes account for a relatively small share of new housing starts. What accounts for this? The little research conducted on this question suggests that consumers' lack of knowledge regarding factory-built housing contributes to negative perceptions of the product, thereby reducing the demand.

To increase demand for factory-built housing, will require consumers to understand the differences in technologies, and the products offered by factory-built housing suppliers. Given the importance of changing consumers' perceptions to increase the demand for factory-built housing, it is critical for industry stakeholders to understand the factors that contribute to consumers' perceptions, and how these perceptions can be changed to increase demand.

This study provides information regarding consumers' perceptions of different types of housing technologies and, to the extent possible, the factors that explain differences in these perceptions. The results examine consumer understanding of different types of building technologies and their preferences regarding them.

Specifically, this report:

- Determines the current level of awareness regarding modular and panelized construction.
- Measures current attitudes about modular and panelized construction.
- Assesses the relationship between awareness and attitudes toward modular and panelized construction.
- Measures the extent of perceived differences between modular, panelized, and HUD code manufactured housing.

Methodology

Data were collected through two types of surveys: 1) a Web-based instrument that was administered to respondents on-line and 2) an instrument that was administered to respondents over the telephone. The Web-based sample is drawn from Survey Sampling International's (SSI) panel of over 1.5 million registered members. The members who participated in this survey were limited to those living in the United States and over the age of 18. The Web-based-survey instrument was advertised on SSI's list, and interested members were permitted to complete the survey. SSI's quality control staff monitored this process to ensure that geographic overrepresentation did not occur. This process resulted in 10,745 people taking the survey, 10,265 completed surveys that were deemed valid, and subsequently were used in this

analysis. More information about SSI panel recruitment process can be found in appendix C of this document.

The Web-based survey and the telephone survey asked respondents to answer questions about different types of housing technologies (site-built, manufactured, modular, and panelized, referred to herein as the housing types). An important difference between the two surveys is that the Web-based survey instrument includes photographs of each type of housing; respondents were asked questions about their perceptions of different housing types based on the photographs. The respondents to the telephone survey did not see photographs of homes; rather, their perceptions of different housing types were based on their understanding of these types. The instruments for both the Web-based and telephone surveys are included in appendix B.

In addition to showing photographs, the Web-based survey resulted in many more responses (just over 10,000) as compared to between 2,800 and 3,000 expected responses to the telephone survey. Because of the larger number of Web responses, more extensive statistical analyses of the responses to the Web-based survey can be conducted in the future. However, the respondents to the Web-based sample are not necessarily representative of all U.S. consumers, and the results therefore may not be generalizable to the entire population. Nonetheless, the results presented in the following section of this report reflect the responses of a large number of consumers, and so provide useful information regarding consumer attitudes to building technologies.

As with the Web-based survey, respondents to the telephone survey were asked questions about the four housing types. Of course, the respondents to the telephone survey did not see photographs of homes; rather, their perceptions of each housing type are based on their understandings of each type and their perceptions of their attributes.

Random samples of respondent's telephone numbers were accessed with a list-assisted random digit dialing (RDD) approach. This is the same method used by the University of Michigan's Consumer Survey from which HUD has drawn previous survey data results. List-assisted RDD, although not as inclusive as pure RDD, is a much more efficient method of selecting households to survey. In pure RDD, all possible combinations of area code and three digit prefixes have randomly generated four digit suffixes attached. The resulting numbers include businesses, disconnects, and never assigned numbers. This greatly increases the number of non-productive calls that must be made. List-assisted RDD differs in that it assigns random numbers in "100 series" of numbers that have been demonstrated to have been allocated to customers. This greatly increases the efficiency of the sample with minimal loss of working numbers.

SSI was used for the sampling and employs the list-assisted RDD approach to sampling. SSI routinely surveys new "100 series" number banks for inclusion. In addition, SSI increases the efficiency of the sample by screening the resulting sample against lists of disconnects and businesses. Previous experience with list-assisted RDD is that the incidence of working household numbers is between 20 and 25 percent. As with any household survey, non-telephone households cannot be included in the final sample. Nationally, this is about three percent of all households, though the proportion may be significantly larger in areas that are poorer, more rural, and more Hispanic. Although this does introduce some biases, the problem is not severe.

The survey was conducted via a Computer Aided Telephone Interviewing (CATI) system between May 3 and August 28, 2006. Calls were made during the evening between 6:00 p.m. and 9:00 p.m. (respondent's local time), on weekends between 11:00 a.m. and 5:00 p.m., and during rotating morning and afternoon hours on weekdays. Call times were varied in order to contact respondents with different work and at-home times. A total of 61,950 phone numbers were attempted to get 2,500 completions. Up to 6 attempts were made on each number.

The remaining sections of this report are organized as follows. A review of literature regarding the factory-built housing types is presented in chapter two; the results of the Web-based and telephone surveys are presented in chapter three and chapter four, respectively. Because the telephone survey has fewer respondents than the Web-based survey, the results in chapter four focus less than the Web-based information in chapter three on the bivariate relationships among variables in the telephone survey data. Rather, the analysis in chapter four includes a comparative analysis of the results between the Web-based and telephone surveys. A summary of findings and resulting marketing recommendations, in chapter five, conclude the report.

2. Literature Review

Given the confusion among consumers regarding factory-built housing terms, it is important to establish a vocabulary that describes different types of factory-built housing, and so the following section of this review defines the terms that will be used throughout this report. After the definition section, a discussion of the overall policy context for HUD's efforts to promote technologies that can deliver housing more cheaply is presented. This is followed by a presentation of the criteria that influence consumers' attitudes for housing in general, and how factory-built housing is perceived with respect to these criteria. It concludes, in the final three sections, with 1) a review of studies that analyze the consumers' perceptions of factory-built housing, 2) successful marketing efforts that have been used to overcome consumers' negative attitudes, and 3) a brief summary and conclusion.

Terminology

Factory-built housing is often contrasted with "site-built" or "stick-built" homes: the traditional technique for constructing residential units, although factory-built homes have been offered in Sears Roebuck catalogs as early as 1908 (Boddy 2002). Site-built homes are ones where the construction is completed on the unit's permanent foundation. This process provides homebuyers with maximum flexibility in choosing a unit's design and amenities.

Building a house on-site, however, is subject to weather constraints and other factors that can increase the time and materials required to complete a home. These risks, of course, can potentially increase construction costs. As such, builders have developed factory-built housing, defined by the Manufactured Housing Institute (2004a) as housing comprised of manufactured, modular/panelized and pre-cut homes.¹ With the exception of manufactured homes, which are typically built with an attached steel chassis, factory-built homes are delivered and further adapted to a site-built foundation (Apgar et al. 2002).

Modular/panelized homes are built to conform to local building codes (National Association of Home Builders [NAHB] Research Center 1998); in many cases these local building codes are adapted from model codes such as the International Residential Code (IRC). Thus, modular/panelized homes must be identical, in terms of building standards in a given jurisdiction, to the site-built housing in that area. Manufactured homes must conform to a national HUD-administered standard.

In the past, manufactured housing accounted for a majority of factory-built housing in the United States (NAHB Research Center 1998). However, that trend seems to have reversed as modular/panelized housing is now increasing its share of factory-built housing starts (National Modular Housing Council 2004). A more detailed discussion of both types of factory-built housing is presented below.

¹ Pre-cut homes, such as log homes, account for a very small share of all factory-built homes, and so are not included in our review.

Manufactured Housing

Manufactured housing shipments now account for 7.1 percent of annual U.S. single-family housing starts (Manufactured Housing Institute, 2004b). These units are disproportionately located in South Carolina, New Mexico, and West Virginia (Epodunk 2004). Because manufactured housing units, compared to site-built homes, are relatively affordable, they accounted for nearly 17 percent of homeownership growth during the early and mid 1990s (Bradley 1997).

Manufactured housing, in addition to conforming to a HUD-administered code, requires a chassis (Apgar et al. 2002) and wheels (Knack 1995), which creates the impression among some consumers that manufactured homes can easily be driven away. This is not correct and such misconceptions derive primarily from manufactured homes' industrial and technological roots in mobile recreational vehicles, like the Airstream of the 1930s and 1940s (Burns 2001 and Jandl et al. 1991).

As evidence that manufactured homes are not easily driven away, 30 percent of recently sold manufactured homes have been placed on permanent foundations (U.S. Census Bureau 2004), which is an increase from the 1990s (Fanjoy 2000). John Hood's article reports that fewer than 10 percent of manufactured homes are ever moved from their original site, suggesting that modern factory-built housing is no less permanent than site-built housing (1998). Manufactured homes are not, as a practical matter, mobile and therefore should not be confused with travel trailers or campers, which can be hitched to an automobile (Apgar et al. 2002).

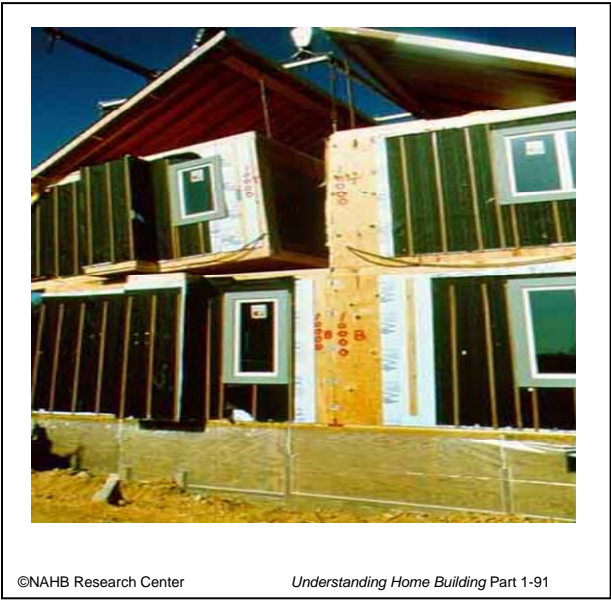
Another perception of manufactured homes is that they are mostly placed in "trailer parks" or other locations where the manufactured home resident does not own the land on which the unit is sited. This is not the case: Ruth Knack reports in her article in *Planning* that more than half of the new units produced in the 1990s were placed on private sites rather than in parks (1995). In a more recent study Richard Genz finds that 70 percent of new manufactured homeowners placed their unit on their own land (2001).

Modular/Panelized Housing

Modular homes currently account for approximately three percent of the annual U.S. single-family housing starts; panelized homes account for a larger share: approximately 11 percent (NAHB Research Center 2004). Similar to manufactured homes, modular homes are geographically concentrated: as of 2003, modular housing in the Northeast and Midwest U.S. census regions comprised 6.5 percent of the single-family homes in those regions (NAHB Research Center 2004). With respect to states as opposed to census regions, modular housing is most popular in North Carolina, Michigan, and New York (McLeod 2004). Panelized housing, on the other hand, is not as regionally concentrated as modular housing (NAHB Research Center 2004).

Although modular/panelized homes, unlike manufactured homes, must conform to local building codes, there are differences in modular and panelized construction technologies. According to Hood (1998), modular homes typically have been larger and more expensive than (closed-wall) panelized homes, which are comprised of factory-made panels that include windows, doors, wiring, and outside siding and are assembled on-site. An example of a modular home under construction is presented in figure 2-1.

Figure 2-1: Modular house being set



However, there is less of a distinction between modular and panelized construction, due to hybrid homes that combine both technologies. For example, some builders are producing open-wall panelized homes that are structurally framed in a factory setting, delivered to the foundation site, and completed onsite. This type of process is similar to the one used to construct modular homes. An example of wood framed panels is presented in figure 2-2.

Figure 2-2: Wood-framed panels



Structural insulated panels, although not a new technology (they were created in 1952), represent an advance in home construction (Kelly 1997). These panels are designed to be used as walls, floors, and roofs and can arrive at the construction site unfinished inside and out or with exterior siding and interior wall

finish (Boddy, 2002). An example of structural insulated panel construction is presented in figures 2-3 and 2-4. As the photographs show, the panels arrive unfinished to a construction site, and are placed onto the housing unit.

Although structural insulated panels may have been less appealing to small builders in the past (Kelly 1997), it did not take long for them to realize the potential of these panels to increase efficiency and boost production (Koebel et al. 2003).

Figure 2-4: Structural insulated roofing panel



Some factory-built housing analysts suggest that modular/panelized homes may be more energy efficient than site-built homes (Intini 2004). For example, Boddy (2002) suggests that because the machinery of factory-built housing production often requires kiln-dried lumber, the construction results in tighter, more energy-efficient homes that can sustain vibrations encountered during their transport to the final site. Boyd (1998) points out that an average modular home, as compared to a site-built home, has 25 percent to 30 percent additional framing members; this may also contribute to increased energy efficiency.

Figure 2-5: Structural insulated panels being installed



Recap of Definitions

To review, site-built housing is distinguished from factory-built housing based on whether or not the components of the house are constructed at the permanent foundation's location. Site-built housing, as the term connotes, is housing in which the unit's components are constructed at the same location as the permanent foundation. Factory-built housing, on the other hand, includes significant structural components that are constructed away from the permanent foundation.

Policy Context

Increasing homeownership is a long-standing policy objective in the United States. As such, HUD sponsors numerous programs and activities to promote homeownership, including 1) the Federal Housing Administration (FHA) program that eliminates default risks for mortgage lenders; 2) the government-sponsored enterprises' (GSE) affordable housing goals that create incentives for Fannie Mae and Freddie Mac to purchase mortgages that are originated for moderate-income borrowers and in traditionally underserved neighborhoods (Blackwell 2004); and 3) monies made available through programs, such as American Dream, HOME, and Community Development Block Grant (CDBG) for down payment assistance and below market interest rate mortgages.

The above programs address the availability of mortgage credit and down payment funds for low- and moderate-income homebuyers. However, such financing is not useful if potential lower income homebuyers cannot find affordable homes to purchase. Even with down payment assistance and mortgages that have below market interest rates, many potential homebuyers have an insufficient income to cover the debt associated with a mortgage that is needed to purchase homes in many metropolitan area markets. Unfortunately, many lower income families are priced out of purchasing homes, and so are unable to receive the benefits associated with homeownership.

Innovations and programs that support affordable mortgages, to be effective, may need to be augmented with initiatives that increase the supply of affordable homes available for purchase. Traditionally, homes have been site-built with certain types of construction materials (that is, 2 x 4 framing/masonry/stone); this type of construction process is relatively costly and may not be able to produce units that are affordable to lower income families.

Factory-built construction methods can produce housing units more cheaply, and so may increase the supply of affordable homes, and thus the homeownership rate for lower income families. Another study demonstrates the potential of one type of factory-built housing to promote homeownership. In an empirical analysis of the relationship between the presence of manufactured housing and homeownership, he finds a 10 percent increase in a community's proportion of manufactured homes resulted in a 2.5 percent homeownership rate increase (Hood 1998).

Although families want to become homeowners, increasing prices for site-built homes have made it difficult for many families to make such a purchase. Therefore, it is likely that there will be an increased demand for factory-built homes over the next 10 years (Intini 2004), as consumers look for less expensive alternatives to site-built homes. This increase in demand for factory-built housing can create a "virtuous circle." Manufacturers will increase their production of factory-built homes, thereby adding more economies of scale that will produce savings that can be passed along to consumers. The resulting lower prices will further increase the demand for factory-built housing, leading to even greater production efficiencies (Intini 2004).

Of course, demand for factory-built housing is affected by the ability of 1) homebuyers to finance purchases, and 2) jurisdictions to allow such homes to be sited in desirable areas. Recent trends in these

two areas are encouraging. Fannie Mae announced a new program under which it will purchase loans on factory-built units with 5 percent down payments (*Origination News*, 2004). This is a significant policy shift that should make it easier for cash-constrained consumers to secure financing for any type of factory-built home, including manufactured and modular/panelized units (Genz 2001). A recent HUD study showed that manufactured housing has appreciation potential for purchasers who place the units on land that they own (Boehm & Schlottmann, 2004). In addition to benefiting homeowners, equity growth potential leads to increased availability and lower costs of financing.

Recognizing the potential for some types of factory-built housing to provide affordable homeownership opportunities, some jurisdictions have passed laws that make it easier to site manufactured homes, which do not have to conform to local building codes. As an example, California recently passed a law that permits manufactured homes built in accordance with local codes to be placed on any residential lot (*Origination News* 2004). This type of legislation, however, may not be enough: there are a number of municipal jurisdictions that restrict smaller homes based on dimensions and square footage. Because manufactured homes tend to be relatively small, such restrictions create a barrier for locating manufactured homes in some jurisdictions.

These local restrictions are unfortunate, as many nonprofit community development corporations are completing projects that incorporate the cost advantages of manufactured homes in order to provide units that are affordable to low- and moderate-income families (Genz 2003). Moreover, there is very recent evidence that market rate production builders are also taking advantage of both factory-built housing's cost-effectiveness and the preexisting scale economies of their currently sizable market shares (*The Washington Post*, December 11, 2004).

Although these trends indicate an increased demand for factory-built housing and increased availability of financing, Bradley (1997) points out that many loans for manufactured housing are originated with relatively high interest rates, because manufactured housing units are often placed on leased land or land not titled as real estate. He concludes that higher interest rates on these loans effectively nullifies the cost advantages associated with the industry's efficiencies, rendering this housing option substantially less affordable. To compensate for these and other market-entry barriers, the factory-built housing industry is offering consumer-driven options and amenities in its homes

Consumer Housing Preferences and Factory-Built Housing

This section presents a review of literature regarding factors that consumers use when considering particular types of housing.

Living Space Features

Factory-built housing producers claim that they produce a product that provides the amenities demanded by new home purchasers (Manufactured Housing Institute 2004a). In general, the literature supports this claim. Factory-built housing can provide homeowners with amenities that are similar to those in site-built homes.

Allen (1999) finds that factory-built homes offer space-saving measures such as stacked washers and dryers and sun decks located above carports, and McLeod (2004) notes that add-ons are being requested for porches and garages. Additionally, Allen (1999) finds factory-built communities offer amenities such as snow removal and lawn treatment applications. In warmer climates like California, options are available that include stucco or wood siding, tile roofs or composite-material shingles, vaulted-ceiling living rooms, formal dining rooms, kitchens with breakfast nooks, master bedrooms with dressing area suites and walk-in closets, and bathrooms sized to accommodate shower stalls and garden tubs (*Origination News* 2004). Boddy (2002) points out that these homes often include roof and floor trusses, pre-hung doors and

windows, modular cabinets, and fiberglass bath and shower units. Boyd (1998) notes that factory-built homes can include nine-foot ceilings and garages and are sited in developments with pools, clubhouses, and playgrounds.

Location, Value, and Resale

Recently factory-built housing producers have begun, and will presumably continue, to capitalize on population migration patterns. For instance, increased housing demand in southern and central California has been met with factory-built homes placed on lots in market-tested, high demand areas (*Origination News* 2004). This same study finds that these communities add value to the properties by offering amenities, including water access, golf, and equestrian, cultural, and educational facilities. Fanjoy (2000) points out these added features targeted for resale purposes in factory-built homes include an Energy Star designation from the U.S. Department of Energy. He describes this designation as being inclusive of home-wide high-efficiency appliances, light fixtures, windows, and insulation, and he adds that such designations indicate that the home's energy performance will improve by at least 30 percent. However, Intini (2004) suggests that without an accompanied land purchase, factory-built homes may have limited marketability.

Image, Comfort, and Convenience

It is no longer the case that consumers must sacrifice aesthetics and amenities when purchasing a factory-built home. Newer versions of factory-built homes contain features, such as peaked roofs, porcelain sinks, and solid oak cabinets that were once only available in site-built homes (Files 1996). Intini (2004) points out that factory-built homes use a variety of materials, including glass, steel, and eco-friendly technologies. He concludes that designers have finally succeeded in merging style and substance in factory-built homes targeted at buyers seeking looks and modern convenience. A marketable competitive advantage associated with factory-built homes is that they can be rapidly produced to customer specification.

Speed of Construction

Technology and innovation are pivotal to the success of factory-built housing producers. Consumers demand speed, and efficient panelized builders are able to deliver faster than many conventional builders (Kelly 1997). Additionally, panelized builders have reduced risk of on-site workers' compensation exposure although their speed has reduced labor costs (Kelly 1997). As an example, Boyd (1998) notes that, in as few as three days, panelized (closed wall) homes can be nearly completed and readied for shipment to the construction site. Intini (2004) finds that some types of factory-built homes are designed so that in the same day they can be delivered to the site in one or more pieces, hoisted from a truck by a crane for placement, and hooked up to utilities. Current plans for adding value and minimizing neighborhood disruptions call for factory-built homes to be placed in subdivisions virtually overnight (Denver Post 2001). These attributes, when optimally coordinated, serve to offer homeowners with a viable reduced-cost alternative to that of traditional site-built homes.

Cost of Construction

Issues pertaining to inventory shortages and increasing home costs are driving factory-built housing to be promoted as an efficient, cost-effective housing option (*Origination News* 2004). Specific savings can be seen in such characteristics as the foundation not having to be completed until needed (Kelly 1997). In some cases, as Fanjoy (2000) points out, factory-built housing companies today can offer homes that range from small manufactured houses to \$3 million modular homes. This broad range of pricing was developed to counter the rising price of traditional site-built homes. For example, in the 1990s, average prices for site-built homes were double that of a typical factory-built homebuyer's annual salary (Files 1996). Factory-built housing options are often the only viable means for some buyers to acquire and own housing given

that, during the past quarter century, the cost of a new home increased on an annual average of 5.8 percent—a rate greater than inflation for this same period (Hood 1998). Regardless of cost savings, market potential for factory-built housing will remain constrained to the extent that manufacturers and trade associations fail to adequately address public misperceptions of these types of homes.

Perceptions of Factory-Built Housing

The literature reviewed above suggests that factory-built homes can include amenities that are similar to those in site-built units. In addition, subdivisions that include factory-built housing are not necessarily traditional “trailer parks.” On the contrary, these subdivisions in some cases include swimming pools, clubhouses, and services that are identical to those in newly constructed site-built subdivisions. Given these findings, what are the perceptions of potential consumers of factory-built housing, and how are they formed? The following discussion approaches this question.

Biased Attitudes

Nearly all research on consumers’ attitudes towards factory-built homes is about manufactured homes, and so the following discussion is largely restricted to that type of housing. A study by Beamish et al. (2001) finds several long-held negative attitudes regarding manufactured homes, which were improperly categorized in large part by a misinformed public as trailers or mobile homes. Concerns related to such sweeping views as these homes contribute to declining neighboring property values and that residents of manufactured homes were more mobile and therefore lacked traditionally-accepted community values. This same study suggested that many of these biases were more in reference to older manufactured homes than newer designs, whose appearance is more difficult to distinguish as different from traditional site-built housing.

Causes of Biased Attitudes

As explained in this review, factory-built housing is offered in multiple styles and price ranges. Yet, it is likely that perceptions regarding factory-built homes are based on attitudes toward mobile homes, (pre-1976 HUD code manufactured homes) and mobile home residents (Intini 2004). Of course, there are many different types of factory-built housing; Beamish et al. (2001) finds that residents able to purchase larger (that is, double versus single section) manufactured homes generally had attained higher levels of education and income.

In addition, some negative perceptions regarding factory-built housing is the belief that factory-built homes typically 1) are designed without basements or attics, 2) have limited storage space, and 3) present a potential danger in storms and fires (Files 1996). O’Hare and O’Hare (1993) remind us of the lingering perceptions of unstable designs resulting from Hurricane Andrew, which decimated entire manufactured home communities. Interestingly, Hood suggests that consumers do not differentiate between manufactured, mobile, and modular homes since they are all delivered on a tractor trailer (1998).

Overall, the literature (albeit restricted to manufactured homes) suggests that despite the reality that many factory-built homes are attractive units with amenities that are desirable to consumers, factory-built homes are not identified as investments that will bring future social or financial rewards. This perception constrains the industry’s market potential (O’Hare and O’Hare 1993). In response to these perceptions, there are some marketing efforts in place to educate the public about the facts regarding factory-built homes.

Successful Marketing Strategies

For factory-built homes to gain recognition as being comparable to traditional site-built homes, industry-wide marketing strategies need to be re-examined. One strategy offered to buyers of factory-built homes is designed to reduce purchasing complications by commissioning a general contractor to coordinate and oversee multi-stage preparations for complete land-home packages (Genz 2003). He further notes that developers are offering buyers permanent foundation options that will improve their resale value, thereby increasing the attractiveness for consumers of choosing factory-built homes.

Another approach being tested is to construct manufacturing facilities in the rear of factory-built home communities, so that builders can construct homes nearly on-site and in less than one-tenth the time required for traditional production homes (*Denver Post* 2001). Start-up costs associated with this system of production yield economies of scale for those producers building 200 or more homes per year, and the facility can be converted to a recreation center after the community is fully developed (*Denver Post* 2001).

Fanjoy (2000) notes that manufacturers are marketing advanced fold-up roof-system technologies that provide steep pitches for factory-built homes. Boyd (1998) points out that customization flexibility is a differentiating strategy that the factory-built housing industry enjoys over many traditional builders. Similarly, Knack (1995) explains that some producers market their flexibility for allowing interiors to be partitioned according to buyers' preferences, locating any room anywhere desired. Another added feature is that after panels are fabricated, they can be shipped internationally in roll-on/roll-off car carriers – a method which adds jobs and eliminates the return of empty car containers (TTJ–Timber & Wood Products 1999).

Conclusion

Factory-built housing, which includes manufactured and modular/panelized homes, has the potential to provide consumers with a relatively affordable, high-quality product. However, many potential consumers are unaware of the advances made by factory-built housing manufacturers to improve the aesthetic appeal of such units. Unfortunately, many potential consumers confuse all factory-built housing with mobile recreational vehicles, like the Airstream of the 1930s and 1940s. In addition, potential consumers may believe that some factory-built housing is sited in areas they perceive to be relatively unattractive.

These misperceptions are likely to change over time, as factory-built housing accounts for an increasing share of housing starts, especially in certain areas of the country. In addition, Fannie Mae now has a program that allows purchasers of manufactured homes to qualify for mortgages with a loan-to-value ratio of 95 percent. Yet, despite these favorable trends, there are still challenges that restrict the potential demand for factory-built housing, especially manufactured housing.

3. Web-Based Survey Results

There were a total of 10,265 completed responses to the Web-based survey from respondents between the ages of 21 and 70 who participate in the family decisions about housing. Compared to a 2005 estimate of the overall U.S. population, the sample has a higher proportion of women, 76 percent versus 51 percent² and whites, 90 percent versus 81 percent, than exists in the general population.³ The mode response for household income is for the category between \$20,000 and \$40,000; the next largest response is for a household income between \$40,000 and \$60,000. These responses suggest that respondents' median income is between \$40,000 and \$60,000, which is comparable to the 2004 national median household income of \$44,389 (table 3-1).⁴

² July 1, 2005 estimate. <http://www.census.gov/popest/national/asrh/NC-EST2005-srh.html>.

³ *Ibid.*

⁴ http://www.census.gov/Press-Release/www/releases/archives/income_wealth/005647.html.

Table 3-1: Sample demographic characteristics

Categories	Frequency	Percent
Gender		
Female	7762	75.82%
Male	2475	24.18%
Total	10237	100.00%
Race		
White	9060	89.61%
African American or Black	581	5.75%
Native American	103	1.02%
Asian American	130	1.29%
Other	237	2.34%
Total	10111	100.01%
Income		
Less than \$20,000	1142	12.07%
\$20,001-\$40,000	2729	28.83%
\$40,001-\$60,000	2287	24.16%
\$60,001-\$80,000	1486	15.70%
Greater than \$80,000	1821	19.24%
Total	9465	100.00%
Education		
High school graduate or less	2019	19.72%
Some college	3815	37.27%
College graduate	2978	29.09%
Professional or graduate degree	1296	12.66%
Other	129	1.26%
Total	10237	100.00%
Census region		
Northeast	1845	17.97%
Midwest	2685	26.16%
South	3522	34.31%
West	2206	21.49%
Canada	7	0.07%
Total	10265	100.00%

Source: Optimal Web-based survey of consumers

The educational attainment level for respondents is slightly higher than that of the general U.S. population. Only 20 percent of respondents have a high school degree or less education, the proportion for the entire U.S. population is 40 percent. On the other hand, 37 percent of respondents have some college, which is a much higher proportion than the 20 percent of the population that has the same level of educational attainment.⁵ The remaining levels of educational attainment in the sample—a college degree or a professional/graduate degree (42 percent combined)—are similar to the overall population’s 40 percent.⁶

⁵ *Ibid.*

⁶ *Ibid.*

There is a positive relationship between educational attainment and income among respondents. Although 19 percent of all respondents have a household income greater than \$80,000, 38 percent of respondents with either a professional or graduate degree have such an income. Conversely, 12 percent of respondents have an income less than \$20,000, but 19 percent of households with a high school diploma or less have an income in that range (table 3-2).

Table 3-2: Respondent income by educational attainment

Income by education						
Income	Education attainment					Total
	High school graduate or less	Some college	College graduate	Professional or graduate degree	Other	
Less than \$20,000	353	450	229	86	22	1140
	18.89%	12.72%	8.37%	7.21%	18.64%	
\$20,001-\$40,000	736.00	1122	638	196	34	2726
	39.38%	31.71%	23.31%	16.44%	28.81%	
\$40,001-\$60,000	427.00	944	654	226	34	2285
	22.85%	26.68%	23.89%	18.96%	28.81%	
\$60,001-\$80,000	218.00	512	506	236	13	1485
	11.66%	14.47%	18.49%	19.80%	11.02%	
Greater than \$80,000	135.00	510	710	448	15	1818
	7.22%	14.41%	25.94%	37.58%	12.71%	
Total	1869.00	3538	2737	1192	118	9454

Source: Optimal Web-based survey of consumers

The regional distribution of respondents is similar to the overall population. The Northeast’s share of the overall population (18 percent) is nearly identical to the samples. The Midwest has 22 percent of the overall population as compared to 26 percent of the sample. There are even smaller differences for the South and West regions, which have 36 percent and 23 percent of the overall population, respectively, as compared to 34 percent and 21 percent of the sample.

A little more than two-thirds of the respondents own their home, which is similar to the overall homeownership rate of 69 percent.⁷ In addition, about five percent of respondents indicated that they have lived exclusively in manufactured housing, although 61 percent said that they have only lived in site-built housing (table 3-3). Nearly one-third of respondents said that they lived in two or more types of housing. It is difficult to determine if these proportions are similar to the overall population; however, as of 1995 manufactured homes accounted for about 7 percent of the overall stock.⁸ This is relatively close to the proportion of respondents who indicated that they lived in such housing. Relatively few respondents indicated that they lived only in either modular (1.3 percent) or panelized housing (0.5 percent).

⁷ <http://www.infoplease.com/ipa/A0883976.html>.

⁸ NAHB Research Center. 1998. Factory and Site-Built Housing: A Comparison for the 21st Century. Washington, DC: US Department of Housing and Urban Development. Report. Table 3, pg. 18.

Table 3-3: Housing characteristics

Categories	Frequency	Percent
Current tenure		
Rent	2935	28.65%
Own	6987	68.21%
Neither	322	3.14%
Total	10244	100.00%
Previous homes lived in		
Site-built	6136	61.07%
Manufactured	469	4.67%
Modular	131	1.30%
Panelized	47	0.47%
Two or more types	3264	32.49%
Total	10047	100.00%

Source: Optimal Web-based survey of consumers

Bivariate Analyses of Respondents' Previous Homes

The following three tables analyze how respondents' previous homes are related to their income, census region, and educational attainment. Higher income respondents are much more likely to have lived in site-built homes: 76 percent of respondents with an income greater than \$80,000 have only lived in such a house, compared to 61 percent of all respondents. Conversely, 8 percent of respondents with an income less than \$20,000 have only lived in manufactured housing; nearly double the 5 percent of all respondents who have lived in such housing (table 3-4).

Table 3-4: Previous homes lived in by income

Type of previous homes by income						
Type of homes lived in	Income					Total
	Less than \$20,000	\$20,001-\$40,000	\$40,001-\$60,000	\$60,001-\$80,000	Greater than \$80,000	
Site-built	490	1422	1355	978	1356	5601
	44.26%	53.62%	60.14%	66.71%	75.50%	
Manufactured	91	166	96	42	40	435
	8.22%	6.26%	4.26%	2.86%	2.23%	
Modular	34	43	23	17	7	124
	3.07%	1.62%	1.02	1.16%	0.39%	
Panelized	13	12	3	6	6	40
	1.17%	0.45%	0.13%	0.41%	0.33%	
Two or more types	479	1009	776	423	387	3074
	43.27%	38.05%	34.44%	28.85%	21.55%	
Total	1107	2652	2253	1466	1796	9274

Source: Optimal Web-based survey of consumers

There is also an inverse relationship between a respondent's income and whether he/she has lived in modular or panelized housing. The proportion of respondents with an income less than \$20,000 (3 percent) who only lived in modular housing is more than twice the proportion of all respondents who lived in such housing; this pattern is nearly the same for panelized housing.

Respondents living in the Northeast are much less likely to have lived in more than one type of housing: less than 25 percent of respondents in that region have lived in more than one type of house, although no

less than 30 percent of respondents in the other regions have lived in more than one type of house. Moreover, respondents in the Northeast are more likely to have lived only in site-built housing (70 percent) compared to other parts of the country. Only slightly more than one-half of respondents in the South have lived only in site-built housing, which is the lowest share in any region (table 3-5). Although there are lower proportions of respondents in the Midwest, South and West regions who have only lived in site-built housing as compared to the Northeast, there are only slight differences in the other types of housing. Therefore, rather than live exclusively in housing other than site-built, the regional differences are that respondents in non-Northeast regions are more likely to have lived in more than one type of housing, rather than to have lived exclusively in non-site-built housing.

Table 3-5: Previous homes lived in by census region

Type of previous homes by region						
Type of homes lived in	Region					Total
	Northeast	Midwest	South	West	Canada	
Site-built	1242	1676	1898	1315	5	6136
	69.66%	63.87%	54.71%	60.77%	71.43%	
Manufactured	91	112	174	92	0	469
	5.10%	4.27%	5.02%	4.25%	0.00%	
Modular	37	34	41	19	0	131
	2.08%	1.3	1.18%	0.88%	0.00%	
Panelized	14	12	13	8	0	47
	0.79%	0.46%	0.37%	0.37%	0.00%	
Two or more types	399	790	1343	730	2	3264
	22.38%	30.11%	38.71%	33.73%	28.57%	
Total	1783	2624	3469	2164	7	10047

Source: Optimal Web-based survey of consumers

Similar to income, educational attainment is also related to the types of housing that a respondent has lived in. Only 50 percent of respondents with a high school degree or less have only lived in site-built housing, as compared to 73 percent of respondents with a professional or graduate degree. Alternatively, 8 percent of respondents in the lowest educational attainment category have lived only in manufactured housing, about twice the overall percentage (table 3-6).

Table 3-6: Previous homes lived in by educational attainment

Previous homes by education						
Type of homes lived in	Education attainment					Total
	High school graduate or less	Some college	College graduate	Professional or graduate degree	Other	
Site-built	989	2116	2007	938	68	6118
	50.28%	56.61%	69.04%	73.22%	53.54%	
Manufactured	166	167	93	37	5	468
	8.44%	4.47%	3.20%	2.89%	3.94%	
Modular	43	49	28	6	2	128
	2.19%	1.31%	0.96%	0.47%	1.57%	
Panelized	14	16	10	5	0	45
	0.71%	0.43%	0.34%	0.39%	0.00%	
Two or more types	755	1390	769	295	52	3261
	38.38%	37.19%	26.45%	23.03%	40.94%	
Total	1967	3738	2907	1281	127	10020

Source: Optimal Web-based survey of consumers

In general, respondents’ housing characteristics are consistent with expectations. About two-thirds of respondents own their own home, and respondents with higher incomes and levels of educational attainment are more likely to have lived exclusively in site-built housing, as compared to manufactured homes. Given these results, it seems reasonable to assume that respondents’ answers, regarding their familiarity with different types of housing technologies and how they rate these technologies with respect to different housing factors, are not biased. The following section reports respondents’ familiarity with each housing type and analyzes the factors that influence their familiarity.

Awareness of Site-built, Manufactured, and Panelized Housing

Web-based survey respondents are generally familiar with the site-built homes: 63 percent of respondents chose either a four or a five (very familiar) when asked their familiarity with that term. This proportion is roughly the same as the 61 percent of respondents who said that they lived exclusively in site-built housing. Surprisingly though, 86 percent of respondents said that they had lived in site-built housing (some of whom lived in more than one type of housing), which means that the proportion of respondents who are familiar with site-built housing is lower than the proportion of respondents who have lived in that type of house.

Table 3-7: Familiarity with site-built, manufactured, modular, and panelized housing

Familiarity by type of housing					
Housing type	Familiarity				
	Not familiar 1	2	3	4	Very familiar 5
Site-built	14.80%	6.58%	15.93%	19.80%	42.89%
Manufactured	12.54%	11.56%	22.99%	22.60%	30.31%
Modular	18.61%	14.25%	24.42%	19.50%	23.22%
Panelized	70.20%	12.27%	8.85%	3.98%	4.70%

Source: Optimal Web-based survey of consumers

A majority (53 percent selected four or five) of respondents are familiar with manufactured homes, which is ten times the proportion of respondents who have only lived in a manufactured home (table 3-3). Moreover, the proportion of respondents who are familiar with manufactured homes is about double the 28 percent of respondents who said that they had lived in manufactured housing (either exclusively or in combination with another type of housing).

Surprisingly, 43 percent of respondents (those who chose four or five) are familiar with modular homes as compared to only 1.3 percent of respondents who said that they had lived exclusively in modular housing (table 3-3). Furthermore, only 12 percent of respondents said that they have lived in modular housing (either exclusively or with another type of housing); therefore it does not seem to be the case that respondents who are familiar with modular homes also lived in that type of housing.

More than 8 out of 10 respondents are not familiar with panelized homes (selecting either a one or two), only nine percent of respondents are familiar (selected either a four or five) with such homes. The proportion of respondents who are familiar with panelized housing is about three times the share of all respondents who lived in that type of home, and 20 times the 0.5 percent of respondents who said that they lived exclusively in panelized homes.

To assess respondents’ familiarity with each housing type, they were asked to choose which of the following 10 construction features were associated with each type of home (the correct answers are in parentheses):

Factory-Built Construction and the American Homebuyer: Perceptions and Opportunities

1. Built to near-full completion in a factory (Manufactured and Modular)
2. Material and components are transported to the home site in stacks on a truck (Site-built and Panelized)
3. Built on a steel frame with wheels (Manufactured)
4. Can readily be moved to another site after initial placement (Manufactured)
5. Often comes in two halves that are joined together at the home site (Manufactured and Modular)
6. Usually built or set on a permanent foundation (Site-built, Modular, and Panelized)
7. Largely constructed at the home site (Site-built and Panelized)
8. Often purchased from a retail home dealer's lot (Manufactured)
9. Typically purchased through a home builder (Site-built, Modular, and Panelized)
10. Typically financed with a mortgage (Site-built, Modular, and Panelized)

The results indicate that most (if not all) of the respondents who said that they were familiar with a given housing type were unable to determine which features are associated with that home. Thirty-five percent of respondents were not able to choose all of the correct answers for any of the ten features and only 20 percent chose all of the correct answers for at least two of the features. This finding suggests that respondents are not aware of the characteristics of the housing types, although they have heard the terms. But, as discussed earlier, two-thirds of respondents indicated that they were familiar with site-built homes; 50 percent are familiar with manufactured homes, and 40 percent are familiar with modular homes.

Tables A-1 through A-24 in appendix A report bivariate analyses of factors that influence respondents' familiarity with each type of home. These bivariate results show that familiarity with each housing type, in general, is a function of income, educational attainment, region, and type of home lived in. But, as discussed earlier, these variables influence each other, and so a multivariate analysis provides more information about the marginal contribution of each factor to a respondent's familiarity with a given housing type.

An ordered logit model was used to determine the impact of a particular factor on a respondent's familiarity with a housing type, holding other factors constant. Ordered logit models are appropriate, since the dependent variable (familiarity) is an ordinal variable that ranges from one (not familiar) to five (very familiar). The results of the ordered logit are presented in the following table: the parameter estimates show the marginal effect of each variable on a respondent's familiarity with site-built, manufactured, modular, and panelized homes. A statistically significant parameter that is greater than zero suggests that the variable has a positive effect on a respondent's familiarity with a given housing type; a statistically significant parameter estimate less than zero suggests the opposite—that the variable has a negative effect on a respondent's familiarity with a given type of housing.

Table 3-8: Coefficients and standard errors obtained from ordered logit models on familiarity with different types of homes

Respondent characteristic	Site-built		Manufactured		Modular		Panelized	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Income between \$20,001 and \$40,000 [†]	0.12	0.07	0.15 [*]	0.07	0.29 ^{***}	0.07	0.08	0.08
Income between \$40,001 and \$60,000 [†]	0.28 ^{***}	0.07	0.18 ^{**}	0.07	0.30 ^{***}	0.07	0.09	0.08
Income between \$60,001 and \$80,000 [†]	0.40 ^{***}	0.08	0.18 [*]	0.08	0.40 ^{***}	0.08	0.21 [*]	0.09
Income over \$80,000 [†]	0.56 ^{***}	0.08	0.12	0.08	0.34 ^{***}	0.07	0.18 [*]	0.09
Some college ^{††}	0.25 ^{***}	0.05	0.08	0.05	0.11 [*]	0.05	0.18 ^{**}	0.06
College graduate ^{††}	0.25 ^{***}	0.06	-0.08	0.06	-0.07	0.06	0.18 [*]	0.07
Professional or graduate degree ^{††}	0.41 ^{***}	0.07	-0.16	0.07	-0.09	0.07	0.25 ^{**}	0.08
Other level of education ^{††}	0.26	0.18	0.11 [*]	0.17	0.30	0.17	0.32	0.20
Midwest ^{†††}	0.17 ^{**}	0.06	0.26 ^{***}	0.06	-0.01	0.06	0.12	0.07
South ^{†††}	0.31 ^{***}	0.06	0.28 ^{***}	0.06	-0.37 ^{***}	0.05	-0.12	0.07
West ^{†††}	0.27 ^{***}	0.06	0.36 ^{***}	0.06	-0.39 ^{***}	0.06	-0.09	0.07
Own ^{††††}	0.67 ^{***}	0.04	0.47 ^{***}	0.04	0.50 ^{***}	0.04	0.11 [*]	0.05
Neither rent nor own ^{††††}	0.01	0.11	-0.09	0.11	0.12	0.11	-0.10	0.14
Lived in site-built homes	1.50 ^{***}	0.07	0.85 ^{***}	0.07	0.72 ^{***}	0.07	0.29 ^{***}	0.08
Lived in manufactured homes	0.51 ^{***}	0.04	1.16 ^{***}	0.04	0.73 ^{***}	0.04	0.19 ^{***}	0.05
Lived in modular homes	0.19 ^{**}	0.06	0.45 ^{***}	0.06	0.96 ^{***}	0.06	0.32 ^{***}	0.06
Lived in panelized homes	0.06	0.12	0.02	0.12	0.13	0.12	1.20 ^{***}	0.12

*Significant at .05 level; ** Significant at .01 level; *** Significant at .001 level.

[†] Reference group for income is “less than \$20,000.” ^{††} Reference group for education attainment is “high school graduates or less.” ^{†††} Reference group census region is “Northeast.” ^{††††} Reference group for current housing tenure is “rent.”

Source: Optimal Web-based survey of consumers

A respondent’s income and educational attainment is a statistically significant factor that determines familiarity with site-built housing, manufactured, and modular housing (table 3-8). The influence of income on a respondent’s familiarity with site-built housing is greater as income increases: the parameter estimate for income greater than \$80,000 is 0.56, although the parameter estimate of income for the other categories ranges from 0.0 to 0.40. Income is also a significant factor in explaining a respondent’s familiarity with manufactured and modular housing, but the parameter estimates are about the same for each income category. This means that the effect on a respondent’s familiarity with those two types of homes is about the same whether the respondent is in the income category \$20,000 to \$40,000, \$40,000 to \$60,000, \$60,000 to \$80,000 or greater than \$80,000 when compared with respondents in the income category of less than \$20,000. Income has an effect on familiarity with panelized homes, but only for respondents with an income greater than \$60,000.

Educational attainment, in addition to income, has a positive and significant effect on respondents’ familiarity with site-built and panelized housing. These effects, of course, are in addition to the separate effects of income. On the other hand, educational attainment only has modest effects on respondents’ familiarity with manufactured and modular housing. Holding other factors constant then, respondents with different levels of educational attainment are just as familiar with these types of homes as respondents with a high school diploma or less.

The region in which a respondent lives has a significant effect on his/her familiarity with all housing types except for panelized homes. Relative to residents in the Northeast, respondents in other parts of the country are more familiar with site-built and manufactured housing. Alternatively, respondents in the South and West are less likely to be familiar with modular homes than respondents in the Northeast.

As expected, familiarity with a given housing type is influenced by whether or not the respondent has lived in that type of home. (Those parameter estimates are shaded in table 3-8.)

Summary of Findings Regarding the Factors Influencing Respondents' Familiarity with Housing Types

Respondents are generally familiar with site-built homes: 63 percent of respondents chose either a four or a five (very familiar) with that term. A majority (53 percent) of respondents indicated that they were either very familiar or somewhat familiar with manufactured homes, which is ten times the proportion of respondents who have only lived in a manufactured home. Moreover, the proportion of respondents who are familiar with manufactured homes is about double the 28 percent of respondents who said that they had lived in manufactured housing (either exclusively or in combination with another type of housing).

Surprisingly, 42 percent of respondents said that they were familiar with modular homes as compared to only 1.3 percent of respondents who said that they had lived exclusively in modular housing. Furthermore, only 12 percent of respondents said that they have lived in modular housing at all (either exclusively or with another type of housing); therefore it does not seem to be the case that respondents who are familiar with modular homes also lived in that type of housing.

Just about 7 out of 10 respondents are unfamiliar with panelized homes, although less than 10 percent are familiar with such homes. The proportion of respondents who are familiar with panelized housing is about three times the share of all respondents who lived in that type of home, and twenty times the 0.5 percent of respondents who said that they lived exclusively in panelized homes.

Income generally had a positive effect on a respondent's familiarity with each housing type, although education primarily affected a respondent's familiarity with site-built, modular, and panelized housing. A respondent's region also affected familiarity with site-built, manufactured, and modular housing. Besides these demographic/locational factors, the type of housing that a respondent has lived in affects his/her familiarity with each type of home. Not surprisingly, this effect is greatest for homes in which the respondent has lived. The following section analyzes respondents' attitudes toward each of the four housing types.

Comparative Analysis of Attitudes to Housing Technologies

Web-based survey questions asked respondents to react to photographs of site-built, manufactured, modular, and panelized homes; the photographs *did not* include information as to the type of home depicted. As a result, the responses are based on perceptions of the photographs, rather than respondents' understanding and attitudes to a term.

For each type of housing photograph, respondents were asked to rate it based on the following criteria:

- Resale value
- Overall value
- Availability of financing
- Quality of surrounding neighborhood
- Ability to quickly construct with varied design features
- Quality of construction

- Impact on the look and feel of the home

All of the factors except for the ability to quickly construct with varied design features are important to at least 87 percent of all respondents (table 3-9). As a result, the extent to which respondents rate each type of housing differently across these factors reflect factors that are important to potential homebuyers.

Table 3-9: Respondents’ ratings of the importance of housing factors

Factor	Percentage of respondents choosing 4 or 5 (very important) when asked about the factor’s importance to selecting a home
Resale value	87.4
Overall value	91.6
Availability of financing	92.5
Quality of surrounding neighborhood	90.3
Ability to quickly construct with varied design features	58.4
Quality of construction	91.7
Impact on the look and feel of the home	88.9

Source: Optimal Web-based survey of consumers

About three-quarters of the respondents indicated that site-built housing has either good or excellent resale value (by selecting a four or five in table 3-10), compared to less than 25 percent of respondents who scored manufactured housing as high for resale value. The proportion of respondents who indicated that modular and panelized homes are either good or excellent with respect to resale value is nearly identical: 55 percent. This proportion is 20 percentage points below that for site-built housing, but more than twice the proportion for manufactured housing (table 3-10).

Table 3-10: Ratings on resale value and property appreciation by housing type

Housing type	Resale value and property appreciation				
	Poor 1	2	3	4	Excellent 5
Site-built	1.24%	2.35%	18.34%	36.31%	41.77%
Manufactured	14.05%	27.30%	34.62%	16.11%	7.93%
Modular	4.34%	10.80%	31.92%	33.94%	18.99%
Panelized	3.06%	9.48%	31.91%	35.66%	19.88%

Source: Optimal Web-based survey of consumers

About the same proportion of respondents who said that site-built housing has either good or excellent resale value indicate that site-built housing is a good or excellent overall value for the money. Just about one-half of respondents indicated that modular and panelized housing was also a good or excellent value for the money, although 40 percent indicated that manufactured housing was a good or excellent value (table 3-11).

Table 3-11: Ratings on overall value by housing type

Housing type	Overall value: The most for the money				
	Poor 1	2	3	4	Excellent 5
Site-built	1.19%	3.7%	23.50%	37.94%	33.67%
Manufactured	7.12%	18.50%	34.23%	25.43%	14.72%
Modular	3.40%	9.09%	32.99%	34.29%	20.23%
Panelized	2.51%	8.74%	33.44%	36.40%	18.92%

Source: Optimal Web-based survey of consumers

Nearly 8 in 10 respondents indicated, by selecting a four or five in table 3-12, that financing is readily available for site-built housing; the proportion for modular and panelized housing is about 50 percent. Manufactured housing, as with other factors, is rated below the three other types: 44 percent of respondents indicated that financing is available for such housing (table 3-12).

Table 3-12: Ratings on availability on financing by housing type

Housing type	Availability of financing				
	Poor 1	2	3	4	Excellent 5
Site-built	0.95%	2.21%	18.52%	37.83%	40.49%
Manufactured	5.85%	15.01%	33.99%	28.52%	16.63%
Modular	3.04%	8.15%	31.57%	35.34%	21.90%
Panelized	2.22%	7.16%	31.72%	36.64%	22.26%

Source: Optimal Web-based survey of consumers

Only 30 percent of respondents indicated, by selecting a four or five in table 3-13, that manufactured housing was available in either a good or excellent neighborhood, although 35 percent of respondents indicated that manufactured housing was available in a neighborhood judged to be either a one (poor) or two. Favorable respondent ratings for the other housing types are about the same as for the other factors: 75 percent for site-built housing and 55 percent for modular and panelized housing (table 3-13).

Table 3-13: Ratings on quality of surrounding neighborhood by housing type

Housing type	Quality of the surrounding neighborhood				
	Poor 1	2	3	4	Excellent 5
Site-built	1.10%	3.53%	19.24%	36.58%	39.55%
Manufactured	11.03%	24.48%	33.77%	19.24%	11.48%
Modular	3.61%	8.63%	31.57%	34.25%	21.94%
Panelized	2.69%	8.84%	32.81%	34.82%	20.84%

Source: Optimal Web-based survey of consumers

Although respondents' rate manufactured homes low based on the quality of the neighborhood in which they are located, respondents believe that manufactured homes provide an ability to quickly construct homes with varied designs. About 51 percent of respondents rated manufactured homes as either good or excellent (four or five) based on this factor, just slightly less than the 54 percent of respondents who rated modular and panelized homes as good or excellent for this factor. As compared to the 70 to 75 percent of respondents who selected either a four or five (excellent) for the other factors, 64 percent of respondents selected for site-built housing either a four or a five (excellent) with respect to its ability to quickly construct housing with varied design features (table 3-14).

Table 3-14: Ratings on ability to quickly construct with varied design features by housing type

Housing type	Ability to quickly construct with varied design features				
	Poor 1	2	3	4	Excellent 5
Site-built	1.85%	6.87%	26.74%	35.86%	28.68%
Manufactured	5.20%	10.72%	22.67%	32.00%	29.41%
Modular	2.69%	6.69%	25.90%	37.64%	27.08%
Panelized	2.03%	7.23%	27.64%	38.74%	24.36%

Source: Optimal Web-based survey of consumers

Respondents provide low ratings for manufactured housing for the last two factors—construction quality (table 3-15) and the overall look and feel of the home (table 3-16). About 35 percent of respondents indicated that manufactured housing was either good or excellent (four or five) based on those factors, as compared to about 75 percent for site-built housing and 50 to 55 percent for modular and panelized housing.

Table 3-15: Ratings on whether quality of construction is durable and has a warranty by housing type

Housing type	Quality of construction is durable and has a warranty				
	Poor 1	2	3	4	Excellent 5
Site-built	1.76%	5.10%	20.72%	34.93%	37.49%
Manufactured	8.98%	20.65%	31.98%	23.28%	15.12%
Modular	4.05%	11.89%	32.64%	31.84%	19.58%
Panelized	2.73%	10.24%	32.49%	34.18%	20.36%

Source: Optimal Web-based survey of consumers

Table 3-16: Ratings on impact on the look and feel by housing type

Housing type	Impact on the look and feel of the home				
	Poor 1	2	3	4	Excellent 5
Site-built	1.58%	3.71%	19.45%	35.08%	40.18%
Manufactured	10.68%	22.85%	32.41%	21.14%	12.92%
Modular	4.01%	9.92%	30.34%	33.48%	22.25%
Panelized	3.51%	10.67%	32.21%	33.34%	20.27%

Source: Optimal Web-based survey of consumers

The following table reports the mean score, by housing type, for respondents' ratings based on each factor. For example, the mean response for the resale value of site-built housing was 4.15. The mean rating of manufactured housing is 2.77, although the mean ratings for modular and panelized homes are 3.52 and 3.60, respectively.

Table 3-17: Mean ratings for each factor by housing type

Factor	Site-Built	Manufactured	Modular	Panelized
Resale value	4.15	2.77	3.52	3.60
Overall value	3.99	3.22	3.59	3.60
Availability of financing	4.15	3.35	3.65	3.70
Quality of surrounding neighborhood	4.10	2.96	3.62	3.62
Ability to quickly construct design features	3.83	3.70	3.80	3.76
Quality of construction	4.01	3.15	3.51	3.59
Impact on look and feel	4.09	3.03	3.60	3.56

Source: Optimal Web-based survey of consumers

The mean ratings show a similar pattern to the data presented in tables 3-10 through 3-16. Site-built housing has the highest mean rating for each factor, and receives the highest mean rating for resale value and the availability of financing. The mean ratings for modular and panelized homes are nearly identical; this finding suggests that respondents did not believe there was much of a difference between the two factory-built housing types. Manufactured housing has the lowest mean rating for all factors; the smallest difference is for the ability to quickly construct design features. Although manufactured housing receives relatively high scores for this factor, it is the factor that is the least important to potential homebuyers. Manufactured homes are rated relatively low for the remaining factors, which are important to at least 87 percent of respondents.

As shown in tables A-32 through A-66 in appendix A, the mean ratings for each housing type remain unchanged when analyzed by respondent income, educational attainment, and region. Overall, manufactured housing is rated less favorably than the other three types of housing, although modular and panelized factory-built housing types receive just about identical mean scores. Moreover, the mean scores for these two types of housing are greater than the mean for manufactured housing, but less than for site-built housing. This pattern holds for all income categories, levels of educational attainment, and region.

Although the bivariate results suggest that demographic characteristics are not related to how respondents rate each housing type, respondents who lived in manufactured, modular, and panelized housing typically rate such housing higher than the overall average. The following table shows respondents' mean ratings of housing types as well as mean ratings for those housing types in which they have lived.

Table 3-18: Comparison of mean ratings for each factor by home lived in

Factor	Site-built	Manufactured	Modular	Panelized
Resale value	4.15 (4.12)	2.77 (3.21)	3.52 (3.95)	3.60 (3.94)
Overall value	3.99 (3.97)	3.22 (3.49)	3.59 (3.90)	3.60 (3.94)
Availability of financing	4.15 (4.13)	3.35 (3.55)	3.65 (3.92)	3.70 (3.97)
Quality of surrounding neighborhood	4.10 (4.08)	2.96 (3.41)	3.62 (4.02)	3.62 (3.82)
Ability to quickly construct design features	3.83 (3.79)	3.70 (3.73)	3.80 (3.94)	3.76 (3.94)
Quality of construction	4.01 (3.97)	3.15 (3.43)	3.51 (3.81)	3.59 (3.97)
Impact on look and feel	4.09 (4.03)	3.03 (3.49)	3.60 (3.94)	3.56 (3.85)

Source: Optimal Web-based survey of consumers

Respondents who lived in manufactured housing rate manufactured housing more favorably than the overall sample of respondents for all factors except the ability to quickly construct design features. For the remaining features, however, respondents who lived in manufactured housing have higher mean ratings than the overall mean. The same is true for modular and panelized homes. In fact, the mean ratings for respondents who lived in modular and panelized housing for all of the factors are very similar to the mean ratings for site-built housing by respondents who lived in site-built housing. For example, in table 3-18 respondents who lived in modular housing indicate that the quality of neighborhood of modular housing (4.02) is similar to the ratings for site-built housing given by respondents who lived in site-built housing (4.08).

Likelihood of Purchasing a Housing Type

In addition to rating each home by factors, the survey asked respondents how likely they would be to purchase each type of home based on the photographs of each type. This question is a further attempt to collect information about attitudes toward each housing type. Rather than asking for a rating based on pre-selected factors, this question prompts respondents to determine how likely they would be to purchase a given home; these responses presumably are based on factors that the respondent believes to be important.

About 80 percent of respondents selected either a four or five (definite) when asked their likelihood to consider purchasing a site-built home (table 3-19). This proportion is nearly three times the proportion of respondents who selected either a four or five (definite) regarding their likelihood of purchasing a manufactured home, and twice the proportion of respondents who selected a four or five (definite) regarding their likelihood of purchasing either a modular or panelized home.

Table 3-19: Likelihood to consider purchasing a housing type

Housing type	Likelihood to consider purchasing				
	Never 1	2	3	4	Definite 5
Site-built	3.60%	4.99%	12.41%	24.42%	54.59%
Manufactured	26.98%	27.23%	21.79%	15.16%	8.84%
Modular	13.04%	17.60%	28.46%	24.96%	15.93%
Panelized	11.93%	16.64%	26.82%	28.32%	16.30%

Source: Optimal Web-based survey of consumers

Appendix tables A-67 through A-90 report bivariate analyses of how the likelihood of purchasing each housing type is affected by a respondent’s income, age, educational attainment, census region, familiarity with a each housing type, importance of each factor, and the extent to which a respondent is an early adopter of technology. This factor may be important, as some people are more comfortable purchasing products with new and innovative technologies—such respondents may have more favorable attitudes toward purchasing modular and panelized homes.

The bivariate analyses show that the strong preference for site-built housing is not a function of income: 88 percent of respondents with an income less than \$20,000 are very likely to purchase a site-built home, as compared to 90 percent of respondents with an income greater than \$80,000. On the other hand, lower income respondents are more likely to purchase a manufactured, modular, or panelized home. Just under 50 percent of respondents with an income less than \$20,000 would be very likely to purchase a manufactured home, compared to only 17 percent of respondents with an income over \$80,000. There are similar patterns for modular and panelized homes.

A respondent’s educational attainment also has an effect on the likelihood of purchasing manufactured, modular, and panelized homes, but little effect on the likelihood of purchasing a site-built home.

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Respondents with a high school diploma or less education are much more likely to purchase non-site-built homes as compared to respondents with professional or graduate degrees. But, as discussed earlier, there is a strong relationship between income and educational attainment, so it is difficult from the bivariate results to determine the individual effects of educational attainment and income. The remaining bivariate results suggest that respondents' location (census division), familiarity with a given type of housing, and attitudes to technology influence the likelihood of purchasing a given housing type.

A logit model is used to estimate the marginal effects of the above factors on a respondent's likelihood of purchasing each of the four housing types. The results of this model, presented below, show how the likelihood of purchasing a particular type of home is affected by each variable, holding the other factors constant.

Table 3-20: Coefficients and standard errors obtained from ordered logit models on the likelihood to consider purchasing different housing types

Respondent characteristics	Site-built		Manufactured		Modular		Panelized	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Income between \$20,001 and \$40,000 [†]	0.12	0.08	-0.14*	0.07	0.02	0.07	-0.24***	0.07
Income between \$40,001 and \$60,000 [†]	0.17*	0.08	-0.46***	0.07	-0.17*	0.08	-0.42***	0.08
Income between \$60,001 and \$80,000 [†]	0.13	0.09	-0.59***	0.08	-0.27***	0.08	-0.45***	0.08
Income over \$80,000 [†]	0.11	0.09	-0.80***	0.08	-0.57***	0.08	-0.78***	0.08
31-40 years of age ^{††}	-0.12	0.07	0.14*	0.07	-0.13	0.07	0.08	0.07
41-50 years of age ^{††}	-0.24**	0.07	0.44***	0.07	0.06	0.07	0.37***	0.07
51-60 years of age ^{††}	-0.21**	0.07	0.65***	0.07	0.08	0.07	0.48***	0.07
61 years of age or greater ^{††}	-0.19*	0.09	0.65***	0.08	0.03	0.08	0.39***	0.08
Some college ^{†††}	-0.10	0.06	-0.28***	0.06	-0.08	0.06	-0.11	0.06
College graduate ^{†††}	-0.19**	0.07	-0.34***	0.06	-0.15*	0.06	-0.17**	0.06
Professional or graduate degree ^{†††}	-0.14	0.08	-0.48***	0.08	-0.22**	0.08	-0.25***	0.08
Other level of education ^{†††}	-0.25	0.20	-0.11	0.19	-0.07	0.19	-0.23	0.19
Midwest ^{††††}	0.12	0.07	-0.46***	0.06	-0.28***	0.06	-0.06	0.06
South ^{††††}	0.12	0.07	-0.67***	0.06	-0.49***	0.06	-0.23***	0.06
West ^{††††}	0.17*	0.07	-0.32***	0.07	-0.22***	0.07	0.10	0.07
Lived in site-built homes	0.45***	0.08	-0.18*	0.08	-0.17*	0.08	-0.12	0.08
Lived in manufactured homes	-0.09	0.05	0.57***	0.05	0.47***	0.05	0.41***	0.05
Lived in modular homes	-0.15*	0.07	0.32***	0.06	0.26***	0.06	0.25***	0.06
Lived in panelized homes	0.10	0.14	-0.09	0.13	0.04	0.13	0.37**	0.13
Familiarity with site-built homes	0.24***	0.02	-0.09***	0.02	-0.10***	0.02	-0.02	0.02
Familiarity with manufactured homes	0.01	0.03	0.15***	0.03	0.12***	0.03	0.07**	0.03
Familiarity with modular homes	-0.01	0.02	0.08***	0.02	0.13***	0.02	0.06**	0.02
Familiarity with panelized homes	-0.04	0.02	0.03	0.02	-0.03	0.02	0.09***	0.02
Eager to learn about new products	0.05	0.03	0.00	0.03	0.05	0.03	0.04	0.03
Learn to operate new products before I can afford to buy	0.05*	0.02	0.11***	0.02	0.06**	0.02	0.10***	0.02
Enjoy discovering new products and activities	0.04	0.03	0.02	0.03	0.09***	0.03	0.06*	0.03
Use the computer to find information	0.10**	0.03	-0.09**	0.03	0.04	0.03	0.03	0.03
Often surf the internet for fun	0.09***	0.02	0.07**	0.02	0.05*	0.02	0.04	0.02
Buy new technical products before friends	-0.06*	0.02	0.00	0.02	-0.04	0.02	0.00	0.02
Name brands do not matter when buying new technical products	-0.02	0.02	0.13***	0.02	0.09***	0.02	0.11***	0.02
Importance of resale value and property appreciation	0.12***	0.03	-0.20***	0.03	-0.16***	0.03	-0.10**	0.03
Importance of overall value	0.09	0.05	0.17***	0.05	0.16***	0.05	0.14**	0.05
Importance of availability of financing	0.06*	0.03	0.09**	0.03	0.11***	0.03	0.12***	0.03
Importance of quality of neighborhood	0.11**	0.04	-0.18***	0.04	-0.13***	0.04	-0.16***	0.04
Importance of ability to quickly construct with varied design features	-0.05**	0.02	0.23***	0.02	0.23***	0.02	0.16***	0.02
Importance of quality of construction	-0.04	0.05	-0.11*	0.05	-0.09	0.05	0.03	0.05

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Respondent characteristics	Site-built		Manufactured		Modular		Panelized	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Importance of impact on look and feel	0.02	0.04	-0.16***	0.04	-0.07	0.04	-0.14***	0.04

*Significant at .05 level; ** Significant at .01 level; *** Significant at .001 level.

† Reference group for income is “less than \$20,000.” †† Reference group for education attainment is “high school graduates or less.”

††† Reference group census region is “Northeast.” †††† Reference group for current housing tenure is “rent.”

Source: Optimal Web-based survey of consumers

The ordered logit results clarify some of the findings from the bivariate analyses of factors that influence the likelihood of a respondent purchasing a particular type of home. Consistent with the bivariate results, income does not have an effect on the likelihood of purchasing a site-built home, but does have a negative effect on purchasing a manufactured home. That is, higher income respondents are less likely to purchase a manufactured home. The same income effect is evident for panelized homes: higher income respondents are less likely to purchase those homes and, to a lesser extent, modular homes.

Older respondents are less likely to purchase a site-built home, but more likely to purchase a manufactured and panelized home. There is no effect of a respondent’s age on the likelihood of purchasing a modular home. Educational attainment only has an effect on the likelihood of purchasing a manufactured home: respondents with more than a high school degree are less likely to purchase manufactured housing. Respondents with a professional or graduate degree are less likely to purchase panelized homes: there is less of an effect on the likelihood of purchasing modular homes.

Familiarity with a given housing type has a positive effect on the likelihood of purchasing that home. The parameter estimates for the effect of living in a given home and the self-identified familiarity with that home are positive and significant. For example, respondents who have lived in manufactured homes and said that they were familiar with those homes are more likely to purchase a manufactured home. The same is true for the other three housing types.

The variables that operationalize a respondent’s attitudes to new technology also have a positive effect on the likelihood to purchase a manufactured, modular, or panelized home. For example, respondents who enjoy discovering new products are more likely to purchase a modular home than respondents who do not enjoy discovering new products. Moreover, respondents who said that they learned to operate new products before they could buy them are more likely to consider purchasing non- site-built homes.

The importance of different types of housing factors also influences the likelihood to purchase different types of housing. In general, respondents who placed greater weight on a home’s resale value and the home’s neighborhood are less likely to consider non-site-built homes. On the other hand, respondents who placed weight on a home’s overall value and the importance of having the ability to quickly design features are more likely to consider non-site-built housing.

Summary of Web-Based Findings Related to Attitudes toward Housing Types and What Factors Influence These Attitudes

Of the four types of housing included in this study (site-built, manufactured, modular, and panelized), respondents rated site-built housing most favorably. Overall, such housing was rated highest with respect to resale value, overall value, availability of financing, quality of surrounding neighborhood, ability to quickly construct with varied design features, quality of construction, and the impact on the look and feel of the home. Modular and panelized homes were rated on these factors by respondents to be slightly below that of site-built housing. The ratings for these two types of homes were nearly identical to each other; this finding suggests that consumers see little differences between modular and panelized housing. Manufactured housing, based on specific housing factors, is rated below the other three housing types.

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These ratings are similar across respondents' income, educational attainment, and location. However, respondents who lived in a type of factory-built housing, such as manufactured housing, rated that type of housing more favorably than the overall sample. The same is true for respondents who lived in modular and panelized housing.

Site-built housing, in addition to receiving the highest ratings relative to particular factors, is the type of housing that respondents would likely purchase, followed by panelized, modular, and manufactured housing. There are a number of factors that influence the likelihood of purchasing a given housing type. Respondents who place more weight on a home's resale value and the neighborhood in which a home is located are more likely to purchase a site-built home; respondents who place more weight on a home's overall value and an ability to quickly design a home's features favor non-site-built housing.

4. Telephone Survey Analysis Results

This chapter analyzes data collected through telephone interviews with a random sample of 2,500 heads of household during which they were asked questions about their opinions of four housing types. This data collection methodology is different from the Web-based survey, which asked respondents their opinions about pictures of a typical example of each housing type. The two different surveys allow for an analysis of the extent to which consumers rate housing types more favorably by looking at a photograph. Such a comparison allows us to determine the extent to which previous studies, which have suggested that the term “manufactured housing” has negative connotations, are correct, since there are data on consumers’ preferences and attitudes toward housing types based on photographs and responses to direct questions that include the term for each housing type. The telephone survey data were analyzed to:

- Determine the current level of awareness regarding modular and panelized construction.
- Measure current attitudes about modular and panelized construction.
- Assess the relationship between awareness and attitudes to modular and panelized construction.
- Measure the extent to which there are perceived differences between modular, panelized, and HUD code manufactured housing.

In addition to the above four issues, this report also compares the results of the telephone survey data to those collected through the Web-based survey.

Results

A total of 2,500 telephone surveys were completed by respondents between the ages of 21 and 70 who participate in family decisions about housing. Compared to the overall population, the sample has a higher proportion of women, 61 percent versus 39 percent.⁹ The proportion of female respondents to the telephone survey is about 15 percentage points lower than the Web-based survey.

In comparison to the gender composition, the proportion of white respondents in the telephone survey sample (82 percent) is similar to the proportion of whites (81 percent) in the general population,¹⁰ but lower than in the Web-based survey sample (table 4-1). The mode response for household income (29 percent) among telephone respondents is within the highest category (greater than \$80,000); the middle two income categories (between \$20,001 and \$40,000 and \$40,001 to \$60,000) each comprise about 22 percent of the sample. These responses suggest that the telephone survey respondents’ median income is higher than the 2004 national median household income of \$44,389,¹¹ and also higher than the Web-based survey respondents.

⁹ July 1, 2005 estimate. <http://www.census.gov/popest/national/asrh/NC-EST2005-srh.html>.

¹⁰ *Ibid.*

¹¹ http://www.census.gov/Press-Release/www/releases/archives/income_wealth/005647.html.

Table 4-1: Sample demographic characteristics

Categories	Frequency	Percent	Web-based sample percent
Gender			
Female	1514	60.56%	75.82%
Male	986	39.44%	24.18%
Total	2500	100.00%	100.00%
Race			
White	1976	81.55%	89.61%
African American or Black	202	8.34%	5.75%
Native American	44	1.82%	1.02%
Asian American	25	1.03%	1.29%
Hispanic, Latino, Spanish	44	1.82%	n/a
Other	132	5.45%	2.34%
Total	2423	100.01%	100.01%
Income			
Less than \$20,000	245	11.78%	12.07%
\$20,001-\$40,000	461	22.17%	28.83%
\$40,001-\$60,000	445	21.40%	24.16%
\$60,001-\$80,000	320	15.39%	15.70%
Greater than \$80,000	608	29.24%	19.24%
Total	2079	99.98%	100.00%
Education			
High school graduate or less	583	23.66%	19.72%
Some college	740	30.03%	37.27%
College graduate	667	27.07%	29.09%
Professional or graduate degree	474	19.24%	12.66%
Other	0	0%	1.26%
Total	2464	100.00%	100.0%
Census region			
Northeast	379	15.36%	17.97%
Midwest	676	27.40%	26.16%
South	806	32.67%	34.31%
West	606	24.56%	21.49%
Canada			.07%
Total	2467	99.99%	100.0%

Sources: Optimal surveys of consumers

The educational attainment level for the telephone survey respondents, similar to those responding to the Web-based survey, is slightly higher than that of the general U.S. population. Only 24 percent of telephone survey respondents have a high school diploma or less education, although the proportion for the entire U.S. population is 40 percent.¹² On the other hand, 30 percent of respondents have some college, which is a greater proportion than the 20 percent of the population that has the same level of educational attainment.¹³ The remaining levels of educational attainment—a college degree or a

¹² <http://www.census.gov/population/www/socdemo/education/cps2004.html>.

¹³ *Ibid.*

professional/graduate degree (46 percent combined– in the telephone sample are also higher than the overall population’s 40 percent.¹⁴ Moreover, the proportion of telephone survey respondents with a professional or graduate degree (19 percent) is six percentage points greater than the respondents to the Web-based survey.

Similar to the Web-based survey sample, the regional distribution of telephone survey respondents is similar to the overall population: the Northeast’s share of the overall population (18 percent) is only slightly higher than the telephone sample’s; the Midwest has 22 percent of the overall population as compared to 27 percent of the sample. There are even smaller differences for the South and West regions, which have 36 percent and 23 percent of the overall population, respectively, as compared to 33 percent and 25 percent of the telephone survey sample.

The proportion of telephone survey respondents who own their home (79 percent) is higher than that for Web-based respondents and the overall homeownership rate of 69 percent.¹⁵ The proportion of telephone respondents who have lived in each housing type exclusively or in two more types is similar to those among the Web-based survey respondents. It is difficult to determine if these proportions are similar to the overall population; however, as of 1995 manufactured homes accounted for about 7 percent of the overall stock.¹⁶ This is higher than the proportion of telephone survey respondents who indicated that they exclusively lived in such housing. Relatively few respondents indicated that they lived only in either modular (1.8 percent) or panelized housing (0.7 percent).

Table 4-2: Telephone sample housing characteristics

Categories	Frequency	Percent	Web-based sample percent
Current tenure status			
Rent	494	19.95%	28.65%
Own	1953	78.88%	68.21%
Neither	29	1.17%	3.14%
Total	2476	100.00%	100.00%
Previous homes lived in			
Site-built	1466	60.35%	61.07%
Manufactured	62	2.55%	4.67%
Modular	43	1.77%	1.30%
Panelized	17	0.70%	0.47%
Two or more types	841	34.62%	32.49%
Total	2429	99.99%	100.00%

Source: Optimal surveys of consumers

¹⁴ *Ibid.*

¹⁵ <http://www.infoplease.com/ipa/A0883976.html>.

¹⁶ NAHB Research Center. 1998. *Factory and Site-Built Housing: A Comparison for the 21st Century*. Washington, DC: US Department of Housing and Urban Development. Report. Table 3, pg. 18.

http://www.toolbase.org/docs/MainNav/Manufacturedfactory-builtHousing/4281_factorya.pdf.

Awareness of Site-built, Manufactured, Modular, and Panelized Housing

About 45 percent of the telephone survey respondents selected either a four or five (very familiar) when asked their familiarity with site-built, manufactured, or modular housing. Less than one in ten telephone survey respondents selected either a four or five (very familiar) when asked about their familiarity with panelized housing (table 4-3).

Table 4-3: Familiarity with site-built, manufactured, modular, and panelized housing

Familiarity by housing type					
Housing type	Familiarity				
	Not familiar 1	2	3	4	Very familiar 5
Site-built	36.66%	7.15%	10.73%	11.37%	34.08%
Manufactured	19.39%	14.30%	23.20%	16.99%	26.12%
Modular	25.21%	16.08%	22.80%	13.51%	22.40%
Panelized	73.68%	9.81%	7.63%	3.07%	5.81%

Source: Optimal telephone survey of consumers

Telephone survey respondents are generally less familiar with the housing types than Web-based respondents. With the exception of panelized housing, Web-based respondents' mean choice on the five-point familiarity scale is statistically higher (evidencing greater familiarity) than the telephone survey respondents (table 4-4). This result is somewhat surprising, given the higher proportion of college graduates and professional degree recipients, along with a greater proportion of respondents with an income greater than \$80,000, in the telephone survey sample as compared to the Web-based survey sample. There is no statistically significant difference between the mean levels of respondents' familiarity with panelized housing between the two samples.

Table 4-4: Mean scores of familiarity with different housing types: Telephone Survey and Web-based Survey

Housing type	Telephone survey		Web-based survey		T-statistic	P-value
	Mean	Standard error	Mean	Standard error		
Site-built	2.99	0.03	3.69	0.01	-18.69	<0.0001
Manufactured	3.16	0.03	3.47	0.01	-9.52	<0.0001
Modular	2.92	0.03	3.14	0.01	-6.91	<0.0001
Panelized	1.58	0.02	1.61	0.01	-1.26	0.20

Source: Optimal surveys of consumers

Given the results of the two samples, it appears that somewhere between 45 percent and 60 percent of consumers are familiar with the terms "site-built," "manufactured," and "modular" housing. There is very little familiarity with the term "panelized" housing, with no more than ten percent of consumers familiar with that term.

Table 4-5 presents the parameter estimates for the effect of different types of characteristics on a respondent's familiarity with each housing type. As with the Web-based survey, the telephone survey data are used to model familiarity with a given housing type as a function of the following factors: a respondent's income, educational attainment, location, tenure status, and type of home lived in.

Although income has very little influence on a respondent's familiarity with site-built housing, there is a positive and significant effect of income on a respondent's familiarity with manufactured and modular

housing. Educational attainment has little effect on a respondent's familiarity with any of the housing types with the exception of manufactured housing. The results suggest that respondents with some college are more familiar with manufactured housing as compared to high school graduates or less.

Rather than income or educational attainment, the ordered logit results suggest that a telephone respondent's tenure status and type of home lived in have greater effects on a respondent's familiarity with a given housing type. Moreover, a respondent is much more likely to be familiar with a housing type that he/she has already lived in. For example, the parameter estimate of familiarity with site-built housing for a respondent who exclusively lived in site-built housing (0.96) is greater than a respondent's familiarity with that type of housing who exclusively lived in the three other housing types. This pattern holds for a respondent's familiarity with manufactured, modular, and panelized housing.

In addition to the type of housing previously lived in, owners are more familiar with particular housing types (with the exception of panelized housing) as compared to renters. Finally, a respondent's location (measured by census region) has no effect on his/her familiarity with site-built or panelized housing, but has a significant effect on a respondent's familiarity with manufactured and modular housing. Compared to respondents in the Northeast, respondents in the other three census regions were more familiar with manufactured homes, perhaps due to their prevalence in areas outside of the Northeast. On the other hand, respondents in the Northeast were more familiar with modular housing than respondents in other parts of the country, perhaps consistent with modular homes' disproportionately large share of new housing starts in that region of the country.

Table 4-5: Coefficients and standard errors obtained from ordered logit models on familiarity with different housing types

Respondent's characteristics	Site-built		Manufactured		Modular		Panelized	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Income between \$20,001 and \$40,000 [†]	-0.06	0.15	0.34 [*]	0.15	0.24	0.15	0.41 [*]	0.19
Income between \$40,001 and \$60,000 [†]	0.13	0.16	0.47 ^{**}	0.16	0.27	0.16	0.16	0.20
Income between \$60,001 and \$80,000 [†]	-0.03	0.17	0.20	0.17	0.31	0.17	-0.01	0.22
Income over \$80,000 [†]	0.33 [*]	0.16	0.50 ^{**}	0.16	0.63 ^{***}	0.16	0.19	0.21
Some college ^{††}	0.21	0.12	0.33 ^{**}	0.11	0.20	0.11	0.12	0.14
College graduate ^{††}	0.10	0.12	0.12	0.12	0.01	0.12	0.26	0.15
Professional or graduate degree ^{††}	0.01	0.14	0.02	0.13	-0.08	0.13	0.22	0.17
Midwest ^{†††}	0.12	0.13	0.17	0.13	-0.27 [*]	0.13	0.01	0.16
South ^{†††}	0.12	0.13	0.28 [*]	0.12	-0.38 ^{**}	0.13	0.09	0.16
West ^{†††}	0.05	0.13	0.45 ^{**}	0.13	-0.26 [*]	0.13	-0.04	0.17
Own ^{††††}	0.65 ^{***}	0.11	0.31 ^{**}	0.11	0.38 ^{**}	0.11	0.07	0.14
Neither rent nor own ^{††††}	-0.17	0.49	-0.22	0.40	-0.34	0.42	0.15	0.49
Lived in site-built homes	0.96 ^{***}	0.16	0.28	0.16	0.34 [*]	0.16	0.11	0.19
Lived in manufactured homes	0.34 ^{***}	0.09	0.94 ^{***}	0.09	0.58 ^{***}	0.09	0.15	0.11
Lived in modular homes	0.39 ^{***}	0.11	0.71 ^{***}	0.11	1.10 ^{***}	0.11	0.49 ^{***}	0.13
Lived in panelized homes	0.51 ^{**}	0.19	0.08	0.18	0.16	0.19	0.96 ^{***}	0.19

*Significant at .05 level; ** Significant at .01 level; *** Significant at .001 level.

[†] Reference group for income is “less than \$20,000.” ^{††}Reference group for education attainment is “high school graduates or less.” ^{†††}Reference group census region is “Northeast.” ^{††††}Reference group for current housing tenure is “rent.”

Source: Optimal telephone survey of consumers

Comparative Analysis of Attitudes to Housing Technologies

For each housing type, telephone survey respondents were asked to rate it based on the following criteria:

- Resale value
- Overall value
- Purchase price
- Quality of surrounding neighborhood
- Can be quickly constructed
- Ability to choose design features
- Quality of construction
- The look and feel of the finished home

These criteria are similar to the ones that Web-based respondents used to rate photographs of each housing type. Overall, respondents indicated that these criteria are important factors when they consider purchasing a newly-constructed home. As shown in table 4-6, all of the factors except for the ability to quickly construct are important to at least 82 percent of all respondents. As a result, the extent to which respondents rate each type of housing differently across these factors reflect factors that are important to potential homebuyers.

Table 4-6: Importance of various housing factors

Factor	Importance of housing				
	Not important at all 1	2	3	4	Very important 5
Resale value	1.41%	1.65%	6.43%	17.52%	72.99%
Overall value...the most for the money	0.68%	0.84%	7.11%	16.12%	75.24%
Purchase price	0.80%	0.96%	8.40%	19.57%	70.27%
Quality of the neighborhood or surrounding area	0.76%	0.68%	5.44%	17.81%	75.30%
Can be quickly constructed	17.47%	19.96%	34.15%	13.19%	15.23%
Ability to choose design features	1.12%	2.37%	12.96%	23.91%	59.65%
Quality of construction	0.56%	0.20%	0.76%	6.61%	91.87%
The look and feel of the finished home	0.56%	0.44%	4.45%	17.27%	77.27%

Source: Optimal telephone survey of consumers

Telephone survey respondents rated each housing type using a five point Likert scale in which they selected a five if they thought that the particular housing type was excellent based on a given factor, a one if the housing type was poor based on a factor, or some number in between. Site-built housing was rated on average between a four and a five on all factors except for whether it could be constructed quickly (table 4-7).

The telephone respondents rated the remaining factory-built housing types lower than site-built housing for all of the factors except the ability to construct quickly. Manufactured homes received the lowest mean ratings for every factor except for the ability to construct quickly. The mean factor ratings for modular and panelized homes fall in between the high-end mean for site-built and the low-end mean for manufactured homes. Within this range, bounded by site-built and manufactured homes, telephone respondents rated modular homes more highly than panelized homes for purchase price and neighborhood quality. On the other hand, respondents gave higher mean ratings for panelized homes as compared to modular homes based on overall value, neighborhood quality, ability to choose design features, and the look and feel of the finished home (table 4-7).

Table 4-7: Mean ratings for each factor by housing type

Factor	Mean ratings			
	Site-built	Manufactured	Modular	Panelized
Resale value	4.50	3.27	3.58	3.73
Overall value...the most for the money	4.41	3.60	3.80	3.84
Purchase price	4.19	3.89	4.03	4.00
Quality of the neighborhood or surrounding area	4.44	3.56	3.86	3.97
Can be quickly constructed	3.00	3.83	3.86	3.69
Ability to choose design features	4.35	3.56	3.76	3.82
Quality of construction	4.52	3.56	3.80	3.92
The look and feel of the finished home	4.54	3.59	3.85	3.92

Source: Optimal telephone survey of consumers

The differences in telephone respondents' ratings of each housing type across the factors are more clearly presented in tables 4-8 through 4-15. Each table shows the statistically significant differences in the mean ratings provided by telephone respondents, by factor, for each housing type. The tables indicate that site built housing has the highest rating for every factor, except for the ability to construct quickly; although manufactured homes received the lowest ratings. Modular and panelized homes are rated by respondents lower than site-built housing and higher than manufactured housing. In nearly every case the mean differences between the housing types are statistically significant.

Table 4-8: Differences in mean ratings of resale value between different types of housing*

Housing types	Site-built	Manufactured	Modular
Manufactured	1.22		
Modular	0.91	-0.30	
Panelized	0.76	-0.40	-0.12

*All differences are statistically significant.

Source: Optimal telephone survey of consumers

Table 4-9: Differences in mean ratings of overall value between different types of housing*

Housing types	Site-built	Manufactured	Modular
Manufactured	0.81		
Modular	0.61	-0.20	
Panelized	0.57	-0.21	0.03

*All differences are statistically significant with the exception of the highlighted cell.

Source: Optimal telephone survey of consumers

Table 4-10: Differences in mean ratings of purchase price value between different types of housing*

Housing types	Site-built	Manufactured	Modular
Manufactured	0.29		
Modular	0.16	-0.13	
Panelized	0.22	-0.08	0.04

*All differences are statistically significant.

Source: Optimal telephone survey of consumers

Table 4-11: Differences in mean ratings of quality of neighborhood between different types of housing*

Housing types	Site-built	Manufactured	Modular
Manufactured	0.87		
Modular	0.58	-0.29	
Panelized	0.47	-0.37	-0.10

*All differences are statistically significant.
Source: Optimal telephone survey of consumers

Table 4-12: Differences in mean ratings of the ability to be quickly constructed between different types of housing*

Housing types	Site-built	Manufactured	Modular
Manufactured	-0.82		
Modular	-0.86	-0.04	
Panelized	-0.68	0.12	0.17

*All differences are statistically significant.
Source: Optimal telephone survey of consumers

Table 4-13: Differences in mean ratings on the ability to choose design features between different types of housing*

Housing types	Site-built	Manufactured	Modular
Manufactured	0.79		
Modular	0.60	-0.19	
Panelized	0.53	-0.24	-0.06

*All differences are statistically significant.
Source: Optimal telephone survey of consumers

Table 4-14: Differences in mean ratings on the quality of construction between different types of housing*

Housing types	Site-built	Manufactured	Modular
Manufactured	0.97		
Modular	0.74	-0.23	
Panelized	0.63	-0.32	-0.10

*All differences are statistically significant.
Source: Optimal telephone survey of consumers

Table 4-15: Differences in mean ratings on the look and feel of the finished home between different types of housing*

Housing types	Site-built	Manufactured	Modular
Manufactured	0.95		
Modular	0.69	-0.25	
Panelized	0.62	-0.29	-0.05

*All differences are statistically significant.
Source: Optimal telephone survey of consumers

The major difference between the Web-based and telephone surveys is that respondents, in the Web-based survey, rated housing types based on a picture of that type, although telephone respondents rated housing types based in response to a direct question about that housing type. The main reason for using two different types of questionnaires is to determine if respondents rated each housing type differently based on seeing a picture of that type. The results presented in tables 4-16 through 4-19 show that

telephone survey respondents generally rated every housing type more favorably than the Web-based respondents who rated homes based on a picture.¹⁷

For example, telephone survey respondents rated site-built housing more favorably for every common factor on both surveys as compared to the site-built ratings provided by Web-based respondents.

Table 4-16: Comparison of mean ratings on housing factors between telephone survey and Web-based survey – Site-built housing

Housing factor	Web-based survey		Telephone survey		T-statistic	P-value
	Mean	Standard error	Mean	Standard error		
Resale value	4.15	0.01	4.50	0.02	-17.49	<.0001
Overall value...the most for the money	3.99	0.01	4.41	0.02	-20.53	<.0001
Quality of the neighborhood or surrounding area	4.10	0.01	4.44	0.02	-17.17	<.0001
Quality of construction	4.01	0.02	4.52	0.02	-25.38	<.0001
The look and feel of the finished home	4.09	0.01	4.54	0.02	-24.87	<.0001

Source: Optimal surveys of consumers

The same pattern holds for manufactured housing. Telephone survey respondents rated manufactured housing more favorably than Web-based respondents. This result is somewhat surprising, since some literature suggests that consumers have a pejorative view of the term “manufactured housing,” and so would rate a picture of a manufactured home more favorably. The survey findings suggest that this is not the case: for every factor telephone respondents rated manufactured homes more favorably than the Web-based responses to manufactured home photographs.

Table 4-17: Comparison of mean ratings on housing factors between telephone survey and Web-based survey – Manufactured housing

Housing factor	Web-based survey		Telephone survey		T-statistic	P-value
	Mean	Standard error	Mean	Standard error		
Resale value	2.77	0.01	3.27	0.03	-16.33	<.0001
Overall value...the most for the money	3.22	0.01	3.60	0.03	-13.36	<.0001
Quality of the neighborhood or surrounding area	2.96	0.01	3.56	0.03	-19.59	<.0001
Quality of construction	3.15	0.03	3.56	0.03	-13.45	<.0001
The look and feel of the finished home	3.03	0.01	3.59	0.03	-19.19	<.0001

Source: Optimal surveys of consumers

Telephone survey respondents, as shown in the following two tables, also rated modular and panelized homes more favorably with respect to the common housing factors as compared to Web-based respondents. All of these differences are statistically significant at a p-value of .05 or less.

¹⁷ Some of the factors rated by respondents to the Web-based survey are slightly different from those rated by telephone survey respondents. As a result, we limit our comparisons to common factors across both surveys.

Table 4-18: Comparison of mean ratings on housing factors between telephone survey and Web-based survey – Modular housing

Housing factor	Web-based survey		Telephone survey		T-statistic	P-value
	Mean	Standard error	Mean	Standard error		
Resale value	3.52	0.01	3.58	0.03	-1.98	0.05
Overall value...the most for the money	3.59	0.01	3.80	0.02	-8.15	<.0001
Quality of the neighborhood or surrounding area	3.62	0.01	3.86	0.02	-8.79	<.0001
Quality of construction	3.51	0.03	3.80	0.03	-10.4	<.0001
The look and feel of the finished home	3.60	0.01	3.85	0.02	-9.78	<.0001

Source: Optimal surveys of consumers

Table 4-19: Comparison of mean ratings on housing factors between telephone survey and Web-based survey –Panelized housing

Housing factor	Web-based survey		Telephone survey		T-statistic	P-value
	Mean	Standard error	Mean	Standard error		
Resale value	3.60	0.01	3.73	0.03	-4.82	<.0001
Overall value...the most for the money	3.60	0.01	3.84	0.02	-9.1	<.0001
Quality of the neighborhood or surrounding area	3.62	0.01	3.97	0.02	-13.42	<.0001
Quality of construction	3.59	0.02	3.92	0.02	-12.18	<.0001
The look and feel of the finished home	3.56	0.01	3.92	0.02	-14.06	<.0001

Source: Optimal surveys of consumers

To assess the extent to which respondents' self-identified their familiarity with a given housing type and their accurate knowledge about that type, respondents were asked to choose which of the following ten construction features were associated with each type of home (the correct answers are in parentheses):

1. Built to near-full completion in a factory (Manufactured and Modular)
2. Material and components are transported to the home site in stacks on a truck (Site-built and Panelized)
3. Built on a steel frame with wheels (Manufactured)
4. Can readily be moved to another site after initial placement (Manufactured)
5. Often comes in two halves that are joined together at the home site (Manufactured and Modular)
6. Usually built or set on a permanent foundation (Site-built, Modular, and Panelized)
7. Largely constructed at the home site (Site-built and Panelized)
8. Often purchased from a retail home dealer's lot (Manufactured)

- 9. Typically purchased through a home builder (Site-built, Modular, and Panelized)
- 10. Typically financed with a mortgage (Site-built, Modular, and Panelized)

The following table shows the proportion of telephone survey respondents who correctly attributed at least one factor to its respective housing type. To be so categorized, for example, a respondent would have to indicate that a site-built house is largely constructed at the home-site. This categorization methodology is different from the used in the Web-based survey, in which respondents were categorized as to the extent to which they accurately chose all of the housing types associated with a given factor. The scoring system resulted in only three percent of Web-based respondents receiving a passing grade. As a result, the scoring system was changed to categorize whether a telephone respondent could accurately identify one particular attribute for a given housing type. Using this definition, 51 percent of respondents could identify one factor associated with a housing type.

Table 4-20: Frequency and percent of respondents who could correctly identify a factor to a housing type

Score	Frequency	Percent
0	14	0.56
1	17	0.68
2	17	0.68
3	37	1.48
4	77	3.08
5	157	6.28
6	323	12.92
7	538	21.52
8	676	27.04
9	546	21.84
10	98	3.92
Total	2500	100.00

Source: Optimal telephone survey of consumers

Telephone respondents who are more knowledgeable about the specific characteristics of the factors associated with particular housing types generally did not provide higher ratings for site-built or manufactured housing. This finding suggests that a respondent knowing the specific features of site-built or manufactured housing does not have an influence on his/her rating of those homes based on specific factors. On the other hand, respondents who passed the knowledge test generally rated modular homes and panelized homes lower than respondents who did not pass the test.

Table 4-21: Mean rating for different types of housing by whether passing the housing knowledge test*

Factor	Passed test	Did not pass test	T-statistic	P-value
Site-built housing				
Resale value	4.55	4.44	-3.21	0.0014
Overall value...the most for the money	4.41	4.40	-0.47	0.6386
Purchase price	4.18	4.20	0.41	0.6812
Quality of the neighborhood or surrounding area	4.46	4.43	-0.73	0.4641
Can be quickly constructed	2.88	3.14	5.42	<.0001
Ability to choose design features	4.40	4.29	-2.92	0.0035
Quality of construction	4.53	4.52	-0.47	0.639
The look and feel of the finished home	4.59	4.49	-3.38	0.0007
Manufactured housing				
Resale value	3.69	3.77	1.63	0.1034
Overall value...the most for the money	3.83	3.86	0.52	0.6056
Purchase price	3.97	4.02	1.24	0.2153
Quality of the neighborhood or surrounding area	3.95	4.00	1.2	0.2312
Can be quickly constructed	3.73	3.64	-1.81	0.0698
Ability to choose design features	3.81	3.84	0.59	0.5531
Quality of construction	3.89	3.96	1.38	0.1685
The look and feel of the finished home	3.87	3.98	2.31	0.0209
Modular housing				
Resale value	3.50	3.67	3.46	0.0006
Overall value...the most for the money	3.75	3.86	2.4	0.0166
Purchase price	4.03	4.03	-0.03	0.9773
Quality of the neighborhood or surrounding area	3.79	3.94	3.05	0.0023
Can be quickly constructed	3.94	3.77	-3.54	0.0004
Ability to choose design features	3.71	3.81	2.15	0.0313
Quality of construction	3.72	3.89	3.46	0.0006
The look and feel of the finished home	3.80	3.91	2.36	0.0184
Panelized housing				
Resale value	3.03	3.55	9.11	<.0001
Overall value...the most for the money	3.46	3.77	5.92	<.0001
Purchase price	3.83	3.97	2.99	0.0028
Quality of the neighborhood or surrounding area	3.36	3.77	7.52	<.0001
Can be quickly constructed	3.93	3.71	-4.28	<.0001
Ability to choose design features	3.40	3.74	6.6	<.0001
Quality of construction	3.37	3.76	7.27	<.0001
The look and feel of the finished home	3.40	3.80	7.63	<.0001

Passing the test is defined by answering eight or more questions correctly.

Source: Optimal telephone survey of consumers

An overwhelming share of telephone respondents (86 percent) indicated, by selecting a four or five (definite) in table 4-22) that they would be likely to consider purchasing a site-built house. Telephone survey respondents, however, are much less likely to consider purchasing the other three types of housing. Although about 86 percent of telephone survey respondents indicated that they would be likely to

consider purchasing a site-built home, only 28 percent of telephone respondents said that they would consider modular homes. Even smaller proportions of telephone respondents (about 25 percent) would be likely to consider either manufactured or panelized homes.

Table 4-22: Likelihood to consider purchasing any particular type of home

Housing type	Never 1	2	3	4	Definite 5
Site-built	4.57%	2.72%	6.49%	9.21%	77.00%
Manufactured	34.94%	15.96%	23.87%	15.32%	9.91%
Modular	26.86%	16.94%	28.82%	16.94%	10.44%
Panelized	31.11%	17.74%	28.42%	15.26%	7.47%

Source: Optimal telephone survey of consumers

Eighty-six percent of telephone respondents would be likely to consider purchasing a site-built home. This percentage is higher than the 80 percent of Web-based survey respondents who indicated that they would be likely to consider purchasing a site-built home. This result is consistent with telephone respondents rating site-built housing more favorably with regard to housing factors than Web-based survey respondents. On the other hand, the mean likelihood of telephone survey respondents' willingness to consider purchasing modular or panelized homes are *lower* than the Web-based survey respondents' mean likelihood. (The difference between the two samples in the mean likelihood to purchase a manufactured home is not statistically significant.)

This finding *is not* consistent with telephone survey respondents who rated modular and panelized homes based on housing factors *higher* than Web-based survey respondents. For some reason telephone respondents, although rating modular and panelized homes more favorably with regard to individual factors than Web-based survey respondents, did not translate those ratings into a higher likelihood to purchase the homes as compared to Web-based respondents who based their answers on photographs. It may be that the Web-based respondents' reactions to photographs of modular and panelized homes, although not resulting in higher factor ratings, had a more favorable overall attitude toward purchasing them.

Table 4-23: Mean score on likelihood to purchase by type of housing

Housing type	Telephone survey		Web-based survey		T-statistic	P-value
	Mean	Standard error	Mean	Standard error		
Site-built	4.51	0.02	4.21	0.04	12.70	<.0001
Manufactured	2.49	0.03	2.52	0.03	-0.87	0.44
Modular	2.67	0.03	3.13	0.03	-15.70	<.0001
Panelized	2.50	0.03	3.20	0.03	-24.30	<.0001

Source: Optimal surveys of consumers

The multivariate analyses results presented below clarify the factors that influence telephone respondents' likelihood to purchase a particular housing type. A respondent's likelihood to consider purchasing a particular housing type was modeled as a function of the following categories of variables: 1) income, 2) age, 3) educational attainment, 4) location, 5) previous types of homes lived in, 6) familiarity with a particular home, 7) attitudes to adopting new technologies, 8) importance of particular housing features, and 9) knowledge of factors associated with housing types.

Table 4-24: Coefficients and standard errors obtained from ordered logit models on the likelihood to consider purchasing different types of homes

Respondent's characteristics	Site-built		Manufactured		Modular		Panelized	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Income between \$20,001 and \$40,000 [†]	0.13	0.18	-0.08	0.15	-0.33*	0.00	-0.05	0.15
Income between \$40,001 and \$60,000 [†]	0.29	0.20	-0.46**	0.16	-0.53**	0.16	-0.31	0.16
Income between \$60,001 and \$80,000 [†]	0.38	0.23	-0.47**	0.17	-0.49**	0.17	-0.33	0.17
Income over \$80,000 [†]	0.52*	0.22	-0.77***	0.17	-0.75***	0.17	-0.52**	0.17
31-40 years of age ^{††}	-0.04	0.20	0.10	0.15	0.17	0.16	-0.02	0.15
41-50 years of age ^{††}	-0.02	0.19	0.31*	0.15	0.36*	0.15	0.03	0.15
51-60 years of age ^{††}	0.27	0.20	0.33*	0.15	0.42**	0.15	0.08	0.15
61 years of age or greater ^{††}	0.05	0.22	0.26	0.17	0.39*	0.17	-0.13	0.17
Some college ^{†††}	0.36*	0.15	-0.14	0.12	-0.18	0.12	-0.11	0.12
College graduate ^{†††}	0.28	0.17	-0.39**	0.13	-0.21	0.13	0.00	0.13
Professional or graduate degree ^{†††}	0.23	0.19	-0.21	0.14	-0.08	0.14	-0.07	0.14
Midwest ^{††††}	0.11	0.18	0.00	0.13	-0.49***	0.13	-0.26*	0.13
South ^{††††}	0.50**	0.18	-0.34**	0.13	-0.61***	0.13	-0.34**	0.13
West ^{††††}	-0.06	0.18	0.06	0.14	-0.48***	0.13	-0.25	0.14
Lived in site-built homes	1.45***	0.17	-0.15	0.16	-0.59***	0.17	-0.42*	0.16
Lived in manufactured homes	-0.28*	0.13	0.36***	0.10	0.24*	0.10	0.28**	0.10
Lived in modular homes	-0.06	0.15	0.15	0.12	0.50***	0.12	0.03	0.12
Lived in panelized homes	-0.13	0.23	0.32	0.19	0.03	0.19	0.72***	0.20
Familiarity with site-built homes	0.19*	0.04	-0.05*	0.03	0.01	0.03	0.00	0.03
Familiarity with manufactured homes	-0.10	0.05	0.08	0.04	0.08*	0.04	0.09*	0.04
Familiarity with modular homes	0.04	0.05	0.05	0.04	0.15***	0.04	0.02	0.04
Familiarity with panelized homes	-0.08	0.05	0.01	0.04	-0.01	0.04	0.15***	0.04
Eager to learn about new products	0.22***	0.05	0.11*	0.04	0.08	0.04	0.07	0.04
Learn to operate new products before I can afford to buy	-0.10*	0.05	0.02	0.03	0.03	0.03	0.04	0.03
Enjoy discovering new products and activities	-0.03	0.06	0.06	0.05	0.03	0.05	0.06	0.05
Use the computer to find information	0.16**	0.05	-0.05	0.04	0.01	0.04	0.00	0.04
Often surf the internet for fun	-0.13*	0.05	0.07	0.04	0.10**	0.04	0.06	0.04
Buy new technical products before friends	0.01	0.05	-0.06	0.04	-0.09*	0.04	-0.04	0.04
Name brands do not matter when buying new technical products	-0.01	0.04	0.07*	0.03	0.06*	0.03	0.09**	0.03
Importance of resale value and property appreciation	0.11	0.08	-0.12*	0.06	-0.19**	0.06	-0.13*	0.06
Importance of overall value	0.17*	0.08	0.10	0.07	0.17**	0.07	0.02	0.07
Importance of purchase price	-0.02	0.09	0.09	0.06	0.05	0.06	-0.04	0.06
Importance of quality of neighborhood	0.14	0.08	0.02	0.06	-0.08	0.06	-0.03	0.07
Importance of ability to be quickly constructed	-0.21***	0.05	0.24***	0.04	0.28***	0.04	0.20***	0.04
Importance of ability to choose design features	0.05	0.07	-0.06	0.05	-0.06	0.05	-0.01	0.05
Importance of quality of construction	0.07	0.13	-0.09	0.11	-0.04	0.11	0.05	0.11
Importance of impact on look and feel	0.26**	0.09	-0.20**	0.08	-0.11	0.08	-0.01	0.07
Passed housing knowledge test	0.67***	0.12	-0.30**	0.09	0.21*	0.09	0.33***	0.09

Factory-Built Construction and the American Homebuyer: Perceptions and Opportunities

*Significant at .05 level; ** Significant at .01 level; *** Significant at .001 level.

† Reference group for income is “less than \$20,000.” †† Reference group for education attainment is “high school graduates or less.” ††† Reference group census region is “Northeast.” †††† Reference group for current housing tenure is “rent.”

Notes:

Source: Optimal telephone survey of consumers

A respondent’s income and educational attainment has a marginal effect on his/her likelihood to consider purchasing a site-built home. The findings suggest that a respondent who previously lived in site-built homes and who was able to match housing factors with housing types is more likely to consider site-built housing. On the other hand, respondents who valued the ability to construct a home quickly are less likely to consider purchasing a site-built home.

Conversely, income has a significant and negative effect on the likelihood to consider purchasing a manufactured home: the (negative) parameter estimate for respondents with an income greater than \$80,000 is almost twice as great as the (negative) parameter estimate for the \$40,001 to \$60,000 and \$60,001 to \$80,000 income categories. Respondents who lived in manufactured homes are more likely to consider purchasing such homes, as are respondents who value the ability to construct a home quickly. Knowledgeable respondents (those who passed the test matching housing factors to types) are less likely to consider purchasing a manufactured home.

Income and age are statistically significant factors for respondents’ likelihood to purchase a modular home. Similar to manufactured homes, there is a negative relationship between income and the likelihood to consider purchasing a modular home; the income parameter estimates are similar in magnitude to the ones for likelihood to purchase manufactured homes. Unlike the other housing types for which age was not statistically significant, older respondents are more likely to consider purchasing a modular home. There is a strong regional effect on the likelihood to purchase a modular home: respondents not located in the Northeast are much less likely to consider purchasing a modular home.

Respondents who lived in modular homes are more likely to consider purchasing them, but respondents who have lived in site-built homes are less likely to consider purchasing modular homes. If representative of all consumers, this finding suggests that it will be difficult to market modular homes to consumers who have lived in site-built homes, which constitute the largest share of existing homes. On the other hand, respondents who value the ability to construct homes quickly are more likely to consider purchasing modular homes and are more knowledgeable consumers. This finding suggests that providing consumers, especially in areas other than the Northeast, with information about modular homes would reduce their resistance to considering modular homes, even if they previously lived in site-built housing.

Income, age, and educational attainment have little influence on respondents’ willingness to consider purchasing a panelized home. Rather, respondents who are familiar with panelized homes, either by having lived in one or with more general knowledge regarding housing features, are more likely to consider a panelized home.

Summary of Findings Related to Attitudes to Housing Types and What Factors Influence These Attitudes

Of the four types of housing included in this study (site-built, manufactured, modular, and panelized), respondents rated site-built housing most favorably. Overall, such housing was rated highest with respect to resale value, overall value, purchase price, quality of surrounding neighborhood, ability to quickly construct, ability to choose design features, quality of construction, and the look and feel of the home. Modular and panelized homes were rated on these factors by respondents to be below that of site-built housing. The ratings for these two types of homes are generally similar to each other, though modular housing is rated as superior to panelized housing with respect to purchase price and its ability to be

quickly constructed. Manufactured housing, based on specific housing factors, is rated below the other three housing types.

Site-built housing, in addition to receiving the highest ratings in relation to particular factors, is the type of housing that respondents would likely purchase, followed by modular homes. Respondents indicated that they are about equally likely to consider panelized and manufactured homes for purchase.

In general, respondents who lived in site-built housing prefer that type of housing to all of the three other types, and so would be less likely to consider purchasing a modular, manufactured, or panelized home. Lower income respondents are more likely to consider purchasing a manufactured home, as are respondents who value the ability to construct a home quickly. Lower income and older respondents are more likely to consider purchasing a modular home, as are respondents who live in the Northeast. Moreover, respondents who are knowledgeable about factors associated with each housing type are more likely to consider purchasing modular and panelized homes.

A key result in this study is that the telephone respondents who rated non-site-built housing types more favorably based on specific housing features were less likely to consider purchasing these homes. In comparison Web-based respondents who rated the homes based on photographs of each housing type decided favorably on the likelihood to purchase. Why would respondents rate a particular type of house more favorably, but be less likely to purchase it?

This finding suggests that consumers' willingness (or lack thereof) to consider purchasing a non-site-built home is less a function of rating individual elements than the overall look of the home. It may be that the Web-based survey respondents, based on their reactions to a photograph of a particular type of home, thought more highly of that home than the telephone respondents, who based their reaction on their predetermined understanding of each type of housing.

5. Marketing Recommendations

The marketing strategies presented below are based on the results of both the Web-based and telephone surveys and provide for actionable strategies for potentially enhancing interests in modular and panelized housing. Based on the attitudes of respondents, the marketing recommendations are derived from the following key principles:

- The importance of quality construction to respondents.
- The distinction between respondents' product knowledge and product experience.
- A marketing message and its delivery media should be made to markets that show the greatest promise for non site-built housing technologies.

The Importance of Quality Construction

The marketing strategies presented in this report are tailored to address the factors most important to consumers when considering whether or not to purchase a particular housing type. Table 5-1 shows the proportion of respondents who selected that a factor was very important to them when evaluating a home. The question regarding a home's quality of construction was not asked the same way in the two surveys, so the table only reports the results from the Web-based survey respondents. The results for the remaining factors in the table are based on the responses to both surveys.

Table 5-1: Most important factors when considering the purchase of a new home

Importance tier	Factor	Proportion of respondents who indicated that a factor was important or very important by selecting either a 4 or 5
High	Quality of construction	92%
Middle	Overall value	79%
	Quality of neighborhood	77%
↓	Look and feel of finished home	75%
	Resale value	75%
Low	Price	70%
↓	Ability to choose design features	60%

Sources: Optimal surveys of consumers

The quality of construction is the most important factor to consumers when considering a new home: 92 percent of respondents said that construction quality was very important. Although the other factors are very important to a sizable proportion of the respondents, none approach 90 percent.

As a result, the recommended marketing strategy is to emphasize similarities in the quality of construction of modular and panelized homes to those of site-built homes. One method for accomplishing this is to develop marketing materials that incorporate final-product photographs of site-built homes juxtaposed with modular and panelized homes so that potential buyers can see that, in most cases, there are no visible

differences in the quality of the homes. Further, examples can be highlighted of how builders that are known for their quality of construction are transitioning between site-built and modular and panelized construction (for example, Pulte Home Sciences). Moreover, marketing materials could include information regarding the specific features of modular and panelized housing that emphasizes the extent to which factors in the High and Middle tiers from Table 1 are similar to those found in site-built homes. Although quality of construction is the most important factor, there is also a subtle difference in the “familiarity” component that may affect marketing strategy.

The Distinction between Product Knowledge and Product Experience

Respondents were administered a knowledge test to determine their level of familiarity with modular and panelized housing. Those who passed the test were deemed knowledgeable by the study regardless of whether they ever lived in modular and panelized housing; those who have or do live in modular and panelized housing were deemed experienced. Marketing strategies could capitalize on this distinction because it differentiates how the most important factor—quality of construction—is perceived. Knowledgeable respondents rated the quality of construction higher for site-built homes than for modular and panelized homes (table 5-2).

Table 5-2: Mean rating for different types of housing based on passing the housing knowledge test*

Factor	Passed test	Did not pass test	T-statistic	P-value
Site-built housing				
Resale value	4.55	4.44	-3.21	0.0014
Overall value...the most for the money	4.41	4.40	-0.47	0.6386
Purchase price	4.18	4.20	0.41	0.6812
Quality of the neighborhood or surrounding area	4.46	4.43	-0.73	0.4641
Can be quickly constructed	2.88	3.14	5.42	<.0001
Ability to choose design features	4.40	4.29	-2.92	0.0035
Quality of construction	4.53	4.52	-0.47	0.639
The look and feel of the finished home	4.59	4.49	-3.38	0.0007
Manufactured housing				
Resale value	3.69	3.77	1.63	0.1034
Overall value...the most for the money	3.83	3.86	0.52	0.6056
Purchase price	3.97	4.02	1.24	0.2153
Quality of the neighborhood or surrounding area	3.95	4.00	1.2	0.2312
Can be quickly constructed	3.73	3.64	-1.81	0.0698
Ability to choose design features	3.81	3.84	0.59	0.5531
Quality of construction	3.89	3.96	1.38	0.1685
The look and feel of the finished home	3.87	3.98	2.31	0.0209
Modular housing				
Resale value	3.50	3.67	3.46	0.0006
Overall value...the most for the money	3.75	3.86	2.4	0.0166
Purchase price	4.03	4.03	-0.03	0.9773
Quality of the neighborhood or surrounding area	3.79	3.94	3.05	0.0023
Can be quickly constructed	3.94	3.77	-3.54	0.0004
Ability to choose design features	3.71	3.81	2.15	0.0313
Quality of construction	3.72	3.89	3.46	0.0006
The look and feel of the finished home	3.80	3.91	2.36	0.0184
Panelized housing				
Resale value	3.03	3.55	9.11	<.0001
Overall value...the most for the money	3.46	3.77	5.92	<.0001
Purchase price	3.83	3.97	2.99	0.0028
Quality of the neighborhood or surrounding area	3.36	3.77	7.52	<.0001
Can be quickly constructed	3.93	3.71	-4.28	<.0001
Ability to choose design features	3.40	3.74	6.6	<.0001
Quality of construction	3.37	3.76	7.27	<.0001
The look and feel of the finished home	3.40	3.80	7.63	<.0001

* Passing the test is defined by answered 8 or more questions correctly.

Source: Optimal telephone survey of consumers

Respondents who have lived in modular and panelized housing rated the quality of construction for those homes higher than did all respondents (table 5-3). For example, the average rating for all Web-based respondents for the quality of construction of manufactured homes is 3.51, but it is 3.81 for respondents who lived in such housing. This pattern is also true for modular homes and panelized homes.

Table 5-3: Comparison of mean ratings for each factor by home lived in

Factor	Percentage indicated factor is important	Site-built	Manufactured	Modular	Panelized
Resale value – All Lived in housing type	87.4	4.15 (4.12)	2.77 (3.21)	3.52 (3.95)	3.60 (3.94)
Overall value – All Lived in housing type	91.6	3.99 (3.97)	3.22 (3.49)	3.59 (3.90)	3.60 (3.94)
Availability of financing – All Lived in housing type	92.5	4.15 (4.13)	3.35 (3.55)	3.65 (3.92)	3.70 (3.97)
Quality of surrounding neighborhood – All Lived in housing type	90.3	4.10 (4.08)	2.96 (3.41)	3.62 (4.02)	3.62 (3.82)
Ability to quickly construct design features All Lived in housing type	58.4	3.83 (3.79)	3.70 (3.73)	3.80 (3.94)	3.76 (3.94)
Quality of construction – All Lived in housing type	91.7	4.01 (3.97)	3.15 (3.43)	3.51 (3.81)	3.59 (3.97)
Impact on look and fee – All Lived in housing type	88.9	4.09 (4.03)	3.03 (3.49)	3.60 (3.94)	3.56 (3.85)

Source: Optimal Web-based survey of consumers

These findings could be used to develop marketing strategies that reinforce the exposure concept such as:

- Site visits similar to those employed by the time-share, vacation-home industry
- Enabling qualified potential buyers to experience modular and panelized homes through offerings such as an overnight stay
- Offering rewards for referrals from those who have lived in modular and panelized homes¹⁸

The Marketing Message and its Delivery Media

Marketing materials can be effectively delivered using a combination of interactive messaging strategies and media. This approach is consistent with the variation observed in the likelihood to purchase site-built housing compared to modular and panelized housing. Respondents’ reactions of a definite likelihood to purchase a particular type of home based on photos in the Web-based survey ranges from 55 percent to 16 percent (table 5-4).

¹⁸ It should be noted that 4-24 of the telephone survey shows that respondents located outside of the Northeast are much less likely to consider purchasing modular and panelized homes.

Table 5-4: Likelihood to consider purchasing any particular type of home

Housing type	Likelihood to consider purchasing				
	Never 1	2	3	4	Definite 5
Site-built	3.60%	4.99%	12.41%	24.42%	54.59%
Manufactured	26.98%	27.23%	21.79%	15.16%	8.84%
Modular	13.04%	17.60%	28.46%	24.96%	15.93%
Panelized	11.93%	16.64%	26.82%	28.32%	16.30%

Source: Optimal Web-based survey of consumers

The likelihood among respondents to the telephone survey that they would definitely consider purchasing a particular type of housing has a much wider range: from 77 percent to 8 percent (table 5). It may be that when modular and panelized homes are viewed in their final form (that is, affixed to a foundation), they are considered to resemble site-built homes more so than when viewed during their construction process (that is, in a factory).

Table 5-5: Likelihood to consider purchasing any particular type of home

Housing type	Never 1	2	3	4	Definite 5
Site-built	4.57%	2.72%	6.49%	9.21%	77.00%
Manufactured	34.94%	15.96%	23.87%	15.32%	9.91%
Modular	26.86%	16.94%	28.82%	16.94%	10.44%
Panelized	31.11%	17.74%	28.42%	15.26%	7.47%

Source: Optimal telephone survey of consumers

The marketing implication of this hypothesis is that marketing materials could capitalize on the similarity of modular and panelized housing to that of site-built housing by showing side-by-side photos of these various housing types in their ready to move in state (for example, landscaped). Further, the quality of construction factor could be reinforced with comparable text regarding the advantages inherent in employing controlled construction practices and environments rather than explicitly showing or explaining how the construction is conducted in a factory. However, refinement of this strategy will require additional investigation.

Development of a Fact Sheet

A marketing strategy could be directed at developing a fact sheet entitled, for example, “So you think you know about modular and panelized housing.” Respondents who passed the knowledge test generally rate modular and panelized housing lower than those who did not pass the test (table 5-6).

Table 5-6: Mean rating for different types of housing by whether passing the housing knowledge test*

Factor	Passed test	Did not pass test	T-statistic	P-value
Site-built housing				
Resale value	4.55	4.44	-3.21	0.0014
Overall value...the most for the money	4.41	4.40	-0.47	0.6386
Purchase price	4.18	4.20	0.41	0.6812
Quality of the neighborhood or surrounding area	4.46	4.43	-0.73	0.4641
Can be quickly constructed	2.88	3.14	5.42	<.0001
Ability to choose design features	4.40	4.29	-2.92	0.0035
Quality of construction	4.53	4.52	-0.47	0.639
The look and feel of the finished home	4.59	4.49	-3.38	0.0007
Manufactured housing				
Resale value	3.69	3.77	1.63	0.1034
Overall value...the most for the money	3.83	3.86	0.52	0.6056
Purchase price	3.97	4.02	1.24	0.2153
Quality of the neighborhood or surrounding area	3.95	4.00	1.2	0.2312
Can be quickly constructed	3.73	3.64	-1.81	0.0698
Ability to choose design features	3.81	3.84	0.59	0.5531
Quality of construction	3.89	3.96	1.38	0.1685
The look and feel of the finished home	3.87	3.98	2.31	0.0209
Modular housing				
Resale value	3.50	3.67	3.46	0.0006
Overall value...the most for the money	3.75	3.86	2.4	0.0166
Purchase price	4.03	4.03	-0.03	0.9773
Quality of the neighborhood or surrounding area	3.79	3.94	3.05	0.0023
Can be quickly constructed	3.94	3.77	-3.54	0.0004
Ability to choose design features	3.71	3.81	2.15	0.0313
Quality of construction	3.72	3.89	3.46	0.0006
The look and feel of the finished home	3.80	3.91	2.36	0.0184
Panelized housing				
Resale value	3.03	3.55	9.11	<.0001
Overall value...the most for the money	3.46	3.77	5.92	<.0001
Purchase price	3.83	3.97	2.99	0.0028
Quality of the neighborhood or surrounding area	3.36	3.77	7.52	<.0001
Can be quickly constructed	3.93	3.71	-4.28	<.0001
Ability to choose design features	3.40	3.74	6.6	<.0001
Quality of construction	3.37	3.76	7.27	<.0001
The look and feel of the finished home	3.40	3.80	7.63	<.0001

Passing the test is defined by answered 8 or more questions correctly.

Source: Optimal Web-based survey of consumers

Moreover, respondents who previously lived in site-built homes are more likely to consider site-built housing (table 5-7). Perhaps these individuals are knowledgeable about factors regarding housing in general, but their information pertaining to current modular and panelized housing construction practices may be biased or outdated.

Table 5-7: Coefficients and standard errors obtained from ordered logit models on the likelihood to consider purchasing different types of homes

Respondent's characteristics	Site-built		Manufactured		Modular		Panelized	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Income between \$20,001 and \$40,000 [†]	0.12	0.08	-0.14*	0.07	0.02	0.07	-0.24***	0.07
Income between \$40,001 and \$60,000 [†]	0.17*	0.08	-0.46***	0.07	-0.17*	0.08	-0.42***	0.08
Income between \$60,001 and \$80,000 [†]	0.13	0.09	-0.59***	0.08	-0.27***	0.08	-0.45***	0.08
Income over \$80,000 [†]	0.11	0.09	-0.80***	0.08	-0.57***	0.08	-0.78***	0.08
31-40 years of age ^{††}	-0.12	0.07	0.14*	0.07	-0.13	0.07	0.08	0.07
41-50 years of age ^{††}	-0.24**	0.07	0.44***	0.07	0.06	0.07	0.37***	0.07
51-60 years of age ^{††}	-0.21**	0.07	0.65***	0.07	0.08	0.07	0.48***	0.07
61 years of age or greater ^{††}	-0.19*	0.09	0.65***	0.08	0.03	0.08	0.39***	0.08
Some college ^{†††}	-0.10	0.06	-0.28***	0.06	-0.08	0.06	-0.11	0.06
College graduate ^{†††}	-0.19**	0.07	-0.34***	0.06	-0.15*	0.06	-0.17**	0.06
Professional or graduate degree ^{†††}	-0.14	0.08	-0.48***	0.08	-0.22**	0.08	-0.25***	0.08
Other level of education ^{†††}	-0.25	0.20	-0.11	0.19	-0.07	0.19	-0.23	0.19
Midwest ^{††††}	0.12	0.07	-0.46***	0.06	-0.28***	0.06	-0.06	0.06
South ^{††††}	0.12	0.07	-0.67***	0.06	-0.49***	0.06	-0.23***	0.06
West ^{††††}	0.17*	0.07	-0.32***	0.07	-0.22***	0.07	0.10	0.07
Lived in site-built homes	0.45***	0.08	-0.18*	0.08	-0.17*	0.08	-0.12	0.08
Lived in manufactured homes	-0.09	0.05	0.57***	0.05	0.47***	0.05	0.41***	0.05
Lived in modular homes	-0.15*	0.07	0.32***	0.06	0.26***	0.06	0.25***	0.06
Lived in panelized homes	0.10	0.14	-0.09	0.13	0.04	0.13	0.37**	0.13
Familiarity with site-built homes	0.24***	0.02	-0.09***	0.02	-0.10***	0.02	-0.02	0.02
Familiarity with manufactured homes	0.01	0.03	0.15***	0.03	0.12***	0.03	0.07**	0.03
Familiarity with modular homes	-0.01	0.02	0.08***	0.02	0.13***	0.02	0.06**	0.02
Familiarity with panelized homes	-0.04	0.02	0.03	0.02	-0.03	0.02	0.09***	0.02
Eager to learn about new products	0.05	0.03	0.00	0.03	0.05	0.03	0.04	0.03
Learn to operate new products before I can afford to buy	0.05*	0.02	0.11***	0.02	0.06**	0.02	0.10***	0.02
Enjoy discovering new products and activities	0.04	0.03	0.02	0.03	0.09***	0.03	0.06*	0.03
Use the computer to find information	0.10**	0.03	-0.09**	0.03	0.04	0.03	0.03	0.03
Often surf the internet for fun	0.09***	0.02	0.07**	0.02	0.05*	0.02	0.04	0.02
Buy new technical products before friends	-0.06*	0.02	0.00	0.02	-0.04	0.02	0.00	0.02
Name brands do not matter when buying new technical products	-0.02	0.02	0.13***	0.02	0.09***	0.02	0.11***	0.02
Importance of resale value and property appreciation	0.12***	0.03	-0.20***	0.03	-0.16***	0.03	-0.10**	0.03
Importance of overall value	0.09	0.05	0.17***	0.05	0.16***	0.05	0.14**	0.05
Importance of availability of financing	0.06*	0.03	0.09**	0.03	0.11***	0.03	0.12***	0.03
Importance of quality of neighborhood	0.11**	0.04	-0.18***	0.04	-0.13***	0.04	-0.16***	0.04
Importance of ability to quickly construct with varied design features	-0.05**	0.02	0.23***	0.02	0.23***	0.02	0.16***	0.02
Importance of quality of construction	-0.04	0.05	-0.11*	0.05	-0.09	0.05	0.03	0.05

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Respondent's characteristics	Site-built		Manufactured		Modular		Panelized	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Importance of impact on look and feel	0.02	0.04	-0.16***	0.04	-0.07	0.04	-0.14***	0.04

*Significant at .05 level; ** Significant at .01 level; *** Significant at .001 level.

† Reference group for income is “less than \$20,000.” †† Reference group for education attainment is “high school graduates or less.”

††† Reference group census region is “Northeast.” †††† Reference group for current housing tenure is “rent.”

Source: Optimal Web-based survey of consumers

Targeted Market Segments

Marketing efforts should also be targeted to consumers who are most likely to be familiar with and have a high likelihood of purchasing different factory-built housing types. In general, lower-income respondents are most familiar with non-site-built housing (table 5-8) and are more likely to consider purchasing a manufactured home (table 5-9).

Table 5-8: Coefficients and standard errors obtained from ordered logit models on familiarity with different types of homes

Respondent's characteristics	Site-built		Manufactured		Modular		Panelized	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Income between \$20,001 and \$40,000[†]	-0.06	0.15	0.34*	0.15	0.24	0.15	0.41*	0.19
Income between \$40,001 and \$60,000[†]	0.13	0.16	0.47**	0.16	0.27	0.16	0.16	0.20
Income between \$60,001 and \$80,000[†]	-0.03	0.17	0.20	0.17	0.31	0.17	-0.01	0.22
Income over \$80,000[†]	0.33*	0.16	0.50**	0.16	0.63***	0.16	0.19	0.21
Some college^{††}	0.21	0.12	0.33**	0.11	0.20	0.11	0.12	0.14
College graduate^{††}	0.10	0.12	0.12	0.12	0.01	0.12	0.26	0.15
Professional or graduate degree^{††}	0.01	0.14	0.02	0.13	-0.08	0.13	0.22	0.17
Midwest^{†††}	0.12	0.13	0.17	0.13	-0.27*	0.13	0.01	0.16
South^{†††}	0.12	0.13	0.28*	0.12	-0.38**	0.13	0.09	0.16
West^{†††}	0.05	0.13	0.45**	0.13	-0.26*	0.13	-0.04	0.17
Own^{††††}	0.65***	0.11	0.31**	0.11	0.38**	0.11	0.07	0.14
Neither rent nor own^{††††}	-0.17	0.49	-0.22	0.40	-0.34	0.42	0.15	0.49
Lived in site-built homes	0.96***	0.16	0.28	0.16	0.34*	0.16	0.11	0.19
Lived in manufactured homes	0.34***	0.09	0.94***	0.09	0.58***	0.09	0.15	0.11
Lived in modular homes	0.39***	0.11	0.71***	0.11	1.10***	0.11	0.49***	0.13
Lived in panelized homes	0.51**	0.19	0.08	0.18	0.16	0.19	0.96***	0.19

*Significant at .05 level; ** Significant at .01 level; *** Significant at .001 level.

† Reference group for income is “less than \$20,000.” †† Reference group for education attainment is “high school graduates or less.” ††† Reference group census region is “Northeast.” †††† Reference group for current housing tenure is “rent.”

Source: Optimal Web-based survey of consumers

Table 5-9: Coefficients and standard errors obtained from ordered logit models on the likelihood to consider purchasing different types of homes

Respondent's characteristics	Site-built		Manufactured		Modular		Panelized	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Income between \$20,001 and \$40,000 [†]	0.13	0.18	-0.08	0.15	-0.33*	0.00	-0.05	0.15
Income between \$40,001 and \$60,000 [†]	0.29	0.20	-0.46**	0.16	-0.53**	0.16	-0.31	0.16
Income between \$60,001 and \$80,000 [†]	0.38	0.23	-0.47**	0.17	-0.49**	0.17	-0.33	0.17
Income over \$80,000 [†]	0.52*	0.22	-0.77***	0.17	-0.75***	0.17	-0.52**	0.17
31-40 years of age ^{††}	-0.04	0.20	0.10	0.15	0.17	0.16	-0.02	0.15
41-50 years of age ^{††}	-0.02	0.19	0.31*	0.15	0.36*	0.15	0.03	0.15
51-60 years of age ^{††}	0.27	0.20	0.33*	0.15	0.42**	0.15	0.08	0.15
61 years of age or greater ^{††}	0.05	0.22	0.26	0.17	0.39*	0.17	-0.13	0.17
Some college ^{†††}	0.36*	0.15	-0.14	0.12	-0.18	0.12	-0.11	0.12
College graduate ^{†††}	0.28	0.17	-0.39**	0.13	-0.21	0.13	0.00	0.13
Professional or graduate degree ^{†††}	0.23	0.19	-0.21	0.14	-0.08	0.14	-0.07	0.14
Midwest ^{††††}	0.11	0.18	0.00	0.13	-0.49***	0.13	-0.26*	0.13
South ^{††††}	0.50**	0.18	-0.34**	0.13	-0.61***	0.13	-0.34**	0.13
West ^{††††}	-0.06	0.18	0.06	0.14	-0.48***	0.13	-0.25	0.14
Lived in site-built homes	1.45***	0.17	-0.15	0.16	-0.59***	0.17	-0.42*	0.16
Lived in manufactured homes	-0.28*	0.13	0.36***	0.10	0.24*	0.10	0.28**	0.10
Lived in modular homes	-0.06	0.15	0.15	0.12	0.50***	0.12	0.03	0.12
Lived in panelized homes	-0.13	0.23	0.32	0.19	0.03	0.19	0.72***	0.20
Familiarity with site-built homes	0.19*	0.04	-0.05*	0.03	0.01	0.03	0.00	0.03
Familiarity with manufactured homes	-0.10	0.05	0.08	0.04	0.08*	0.04	0.09*	0.04
Familiarity with modular homes	0.04	0.05	0.05	0.04	0.15***	0.04	0.02	0.04
Familiarity with panelized homes	-0.08	0.05	0.01	0.04	-0.01	0.04	0.15***	0.04
Eager to learn about new products	0.22***	0.05	0.11*	0.04	0.08	0.04	0.07	0.04
Learn to operate new products before I can afford to buy	-0.10*	0.05	0.02	0.03	0.03	0.03	0.04	0.03
Enjoy discovering new products and activities	-0.03	0.06	0.06	0.05	0.03	0.05	0.06	0.05
Use the computer to find information	0.16**	0.05	-0.05	0.04	0.01	0.04	0.00	0.04
Often surf the internet for fun	-0.13*	0.05	0.07	0.04	0.10**	0.04	0.06	0.04
Buy new technical products before friends	0.01	0.05	-0.06	0.04	-0.09*	0.04	-0.04	0.04
Name brands do not matter when buying new technical products	-0.01	0.04	0.07*	0.03	0.06*	0.03	0.09**	0.03
Importance of resale value and property appreciation	0.11	0.08	-0.12*	0.06	-0.19**	0.06	-0.13*	0.06
Importance of overall value	0.17*	0.08	0.10	0.07	0.17**	0.07	0.02	0.07
Importance of purchase price	-0.02	0.09	0.09	0.06	0.05	0.06	-0.04	0.06
Importance of quality of neighborhood	0.14	0.08	0.02	0.06	-0.08	0.06	-0.03	0.07
Importance of ability to be quickly constructed	-0.21***	0.05	0.24***	0.04	0.28***	0.04	0.20***	0.04
Importance of ability to choose design features	0.05	0.07	-0.06	0.05	-0.06	0.05	-0.01	0.05
Importance of quality of construction	0.07	0.13	-0.09	0.11	-0.04	0.11	0.05	0.11
Importance of impact on look and feel	0.26**	0.09	-0.20**	0.08	-0.11	0.08	-0.01	0.07

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Respondent's characteristics	Site-built		Manufactured		Modular		Panelized	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Passed housing knowledge test	0.67 ^{***}	0.12	-0.30 ^{**}	0.09	0.21 [*]	0.09	0.33 ^{***}	0.09

*Significant at .05 level; ** Significant at .01 level; *** Significant at .001 level.

† Reference group for income is "less than \$20,000." †† Reference group for education attainment is "high school graduates or less."

††† Reference group census region is "Northeast." †††† Reference group for current housing tenure is "rent."

Source: Optimal telephone survey of consumers

The implication of these findings possibly suggests the need for targeted marketing strategies that are focused on consumers who are now living in manufactured housing and who are employed in professions that would enable them to upgrade to modular and panelized housing. Such consumers, since they are already familiar with non site-built housing, are likely to consider purchasing such homes as their incomes increase. Such marketing efforts related to modular homes could be directed to consumers older than 4, since this age group has a higher likelihood to consider this housing type.

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Appendix A: Web-Based Survey Tables

Table A-1: Familiarity with site-built housing by income

Familiarity with site-built housing by income						
Familiarity with site-built housing	Income					Total
	Less than \$20,000	\$20,001-\$40,000	\$40,001-\$60,000	\$60,001-\$80,000	Greater than \$80,000	
Not familiar	262	489	288	174	171	1384
1	22.94%	17.92%	12.59%	11.71%	9.39%	
2	100	214	144	81	76	615
	8.76%	7.84%	6.30%	5.45%	4.17%	
3	204	470	377	210	246	1507
	17.86%	17.22%	16.48%	14.13%	13.51%	
4	198	548	483	299	352	1880
	17.34%	20.08%	21.12%	20.12%	19.33%	
Vary familiar	378	1008	995	722	976	4079
5	33.10%	36.94%	43.51%	48.59%	53.60%	
Total	1142	2729	2287	1486	1821	9465
Chi-square = 286.98 P-value <0.0001						

Table A-2: Familiarity with manufactured housing by income

Familiarity with manufactured housing by income						
Familiarity with manufactured housing	Income					Total
	Less than \$20,000	\$20,001-\$40,000	\$40,001-\$60,000	\$60,001-\$80,000	Greater than \$80,000	
Not familiar	202	354	220	149	225	1150
1	17.69%	12.97%	9.62%	10.03%	12.36%	
2	117	274	263	185	236	1075
	10.25%	10.04%	11.50%	12.45%	12.96%	
3	244	605	544	335	433	2161
	21.37%	22.17%	23.79%	22.54%	23.78%	
4	227	649	523	365	402	2166
	19.88%	23.78%	22.87%	24.56%	22.08%	
Vary familiar	352	847	737	452	525	2913
5	30.82%	31.04%	32.23%	30.42%	28.83%	
Total	1142	2729	2287	1486	1821	9465
Chi-square = 74.13 P-value <0.0001						

Table A-3: Familiarity with modular housing by income

Familiarity with modular housing by income						
Familiarity with modular housing	Income					Total
	Less than \$20,000	\$20,001-\$40,000	\$40,001-\$60,000	\$60,001-\$80,000	Greater than \$80,000	
Not familiar	307	520	386	212	297	1722
1	26.88%	19.05%	16.88%	14.27%	16.31%	
2	150	352	340	216	292	1350
3	13.13%	12.90%	14.87%	14.54%	16.04%	
4	245	644	562	388	448	2287
5	21.45%	23.60%	24.57%	26.11%	24.60%	
Vary familiar	196	580	429	305	359	1869
5	17.16%	21.25%	18.76%	20.52%	19.71%	
Total	244	633	570	365	425	2237
	21.37%	23.20%	24.92%	24.56%	23.34%	
Total	1142	2729	2287	1486	1821	9465

Chi-square = 96.06
P-value <0.0001

Table A-4: Familiarity with panelized housing by income

Familiarity with panelized housing by income						
Familiarity with panelized housing	Income					Total
	Less than \$20,000	\$20,001-\$40,000	\$40,001-\$60,000	\$60,001-\$80,000	Greater than \$80,000	
Not familiar	821	1924	1597	1003	1239	6584
1	71.89%	70.50%	69.83%	67.50%	68.04%	
2	133	334	290	187	243	1187
3	11.65%	12.24%	12.68%	12.58%	13.34%	
4	93	236	202	148	166	845
5	8.14%	8.65%	8.83%	9.96%	9.12%	
Vary familiar	40	123	86	69	68	386
5	3.50%	4.51%	3.76%	4.64%	3.73%	
Total	55	112	112	79	105	463
	4.82%	4.10%	4.9%	5.32%	5.77%	
Total	1142	2729	2287	1486	1821	9465

Chi-square = 18.86
P-value <=0.28

Table A-5: Familiarity with site-built housing by education

Familiarity with site-built housing by education						
Familiarity with site-built housing	Education					Total
	High school graduate or less	Some college	College graduate	Professional or graduate degree	Other	
Not familiar	412	581	365	137	14	1509
1	20.41%	15.23%	12.26%	10.57%	10.85%	
2	152	253	188	67	11	671
	7.53%	6.63%	6.31%	5.17%	8.53%	
3	357	568	500	177	28	1630
	17.68%	14.89%	16.79%	13.66%	21.71%	
4	381	751	619	262	18	2031
	18.87%	19.69%	20.79%	20.22%	13.95%	
Very familiar	717	1662	1306	653	58	4396
5	35.51%	43.56%	43.85%	50.39%	44.96%	
Total	2019	3815	2978	1296	129	10237
Chi-square = 144.62						
P-value <0.0001						

Table A-6: Familiarity with manufactured housing by education

Familiarity with manufactured housing by education						
Familiarity with manufactured housing	Education					Total
	High school graduate or less	Some college	College graduate	Professional or graduate degree	Other	
Not familiar	294	456	361	158	10	1279
1	14.56%	11.95%	12.12%	12.19%	7.75%	
2	217	367	395	185	15	1179
	10.75%	9.62%	13.26%	14.27%	11.63%	
3	410	835	736	341	34	2356
	20.31%	21.89%	24.71%	26.31%	26.36%	
4	425	889	683	292	27	2316
	21.05%	23.30%	22.93%	22.53%	20.93%	
Very familiar	673	1268	803	320	43	3107
5	33.33%	33.24%	26.96%	24.69%	33.33%	
Total	2019	3815	2978	1296	129	10237
Chi-square = 103.96						
P-value <0.0001						

Table A-7: Familiarity with modular housing by education

Familiarity with modular housing by education						
Familiarity with modular housing	Education					Total
	High school graduate or less	Some college	College graduate	Professional or graduate degree	Other	
Not familiar	432	674	548	231	13	1898
1	21.40%	17.67%	18.40%	17.82%	10.08%	
2	251	483	476	231	18	1459
	12.43%	12.66%	15.98%	17.82%	13.95%	
3	442	927	765	328	39	2501
	21.89%	24.30%	25.69%	25.31%	30.23%	
4	382	781	567	245	22	1997
	18.92%	20.47%	19.04%	18.90%	17.05%	
Very familiar	512	950	622	261	37	2382
5	25.36%	24.90%	20.89%	20.14%	28.68%	
Total	2019	3815	2978	1296	129	10237
Chi-square = 80.30						
P-value <0.0001						

Table A-8: Familiarity with panelized housing by education

Familiarity with panelized housing by education						
Familiarity with panelized housing	Education					Total
	High school graduate or less	Some college	College graduate	Professional or graduate degree	Other	
Not familiar	1496	2652	2068	885	87	7188
1	74.10%	69.52%	69.44%	68.29%	67.44%	
2	207	473	391	171	14	1256
	10.25%	12.40%	13.13%	13.19%	10.85%	
3	152	356	268	118	11	905
	7.53%	9.33%	9.00%	9.10%	8.53%	
4	80	155	118	49	4	406
	3.96%	4.06%	3.96%	3.78%	3.10%	
Very familiar	84	179	133	73	13	482
5	4.16%	4.69%	4.47%	5.63%	10.08%	
Total	2019	3815	2978	1296	129	10237
Chi-square = 32.86						
P-value <=0.01						

Table A-9: Familiarity with site-built housing by race

Familiarity with site-built housing by race						
Familiarity with site-built housing	Race					Total
	White	African American or Black	Native American	Asian American	Other	
Not familiar 1	1215 13.41%	167 28.74%	14 13.59%	33 25.38%	57 24.05%	1486
2	566 6.25%	49 8.43%	10 9.71%	15 11.54%	22 9.28%	662
3	1438 15.87%	102 17.56%	12 11.65%	30 23.08%	36 15.19%	1618
4	1837 20.28%	85 14.63%	16 15.53%	24 18.46%	37 15.61%	1999
Very familiar 5	4004 44.19%	178 30.64%	51 49.51%	28 21.54%	85 35.86%	4346
Total	9060	581	103	130	237	10111
Chi-square = 185.96						
P-value <0.001						

Table A-10: Familiarity with manufactured housing by race

Familiarity with manufactured housing by race						
Familiarity with manufactured housing	Race					Total
	White	African American or Black	Native American	Asian American	Other	
Not familiar 1	1018 11.24%	142 24.44%	13 12.62%	43 33.08%	44 18.57%	1260
2	1033 11.40%	71 12.22%	8 7.77%	24 18.46%	28 11.81%	1164
3	2100 23.18%	118 20.31%	18 17.48%	25 19.23%	61 25.74%	2322
4	2098 23.16%	105 18.07%	20 19.42%	22 16.92%	46 19.41%	2291
Very familiar 5	2811 31.03%	145 24.96%	44 42.72%	16 12.31%	58 24.47%	3074
Total	9060	581	103	130	237	10111
Chi-square = 179.78						
P-value <0.001						

Table A-11: Familiarity with modular housing by race

Familiarity with modular housing by race						
Familiarity with modular housing	Race					Total
	White	African American or Black	Native American	Asian American	Other	
Not familiar 1	1499 16.55%	235 40.45%	17 16.50%	49 37.69%	69 29.11%	1869
2	1299 14.34%	74 12.74%	9 8.74%	25 19.23%	33 13.92%	1440
3	2252 24.86%	111 19.10%	22 21.36%	29 22.31%	55 23.21%	2469
4	1840 20.31%	64 11.02%	18 17.48%	15 11.54%	41 17.30%	1978
Very familiar 5	2170 23.95%	97 16.70%	37 35.92%	12 9.23%	39 16.46%	2355
Total	9060	581	103	130	237	10111
Chi-square = 289.16						
P-value <0.001						

Table A-12: Familiarity with panelized housing by race

Familiarity with panelized housing by race						
Familiarity with panelized housing	Race					Total
	White	African American or Black	Native American	Asian American	Other	
Not familiar 1	6372 70.33%	425 73.15%	64 62.14%	84 64.62%	155 65.40%	7100
2	1130 12.47%	50 8.61%	13 12.62%	20 15.38%	30 12.66%	1243
3	783 8.64%	50 8.61%	10 9.71%	13 10.00%	33 13.92%	889
4	359 3.96%	22 3.79%	6 5.83%	7 5.38%	10 4.22%	404
Very familiar 5	416 4.59%	34 5.85%	10 9.71%	6 4.62%	9 3.80%	475
Total	9060	581	103	130	237	10111
Chi-square = 27.81						
P-value <=0.03						

Table A-13: Familiarity with site-built housing by gender

Familiarity with site-built housing by gender			
Familiarity with site-built housing	Gender		Total
	Female	Male	
Not familiar 1	1260 16.23%	250 10.10%	1510
2	548 7.06%	123 4.97%	671
3	1314 16.93%	318 12.85%	1632
4	1500 19.32%	529 21.37%	2029
Very familiar 5	3140 40.45%	1255 50.71%	4395
Total	7762	2475	10237
Chi-square = 129.87 P-value <0.0001			

Table A-14: Familiarity with manufactured housing by gender

Familiarity with manufactured housing by gender			
Familiarity with manufactured housing	Gender		Total
	Female	Male	
Not familiar 1	1013 13.05%	266 10.75%	1279
2	922 11.88%	256 10.34%	1178
3	1804 23.24%	550 22.22%	2354
4	1733 22.33%	586 23.68%	2319
Very Familiar 5	2290 29.50%	817 33.01%	3107
Total	7762	2475	10237
Chi-square = 21.77 P-value <0.001			

Table A-15: Familiarity with modular housing by gender

Familiarity with modular housing by gender			
Familiarity with modular housing	Gender		Total
	Female	Male	
Not familiar 1	1563 20.14%	339 13.70%	1902
2	1096 14.12%	360 14.55%	1456
3	1906 24.56%	596 24.08%	2502
4	1480 19.07%	519 20.97%	1999
Very familiar 5	1717 22.12%	661 26.71%	2378
Total	7762	2475	10237
Chi-square = 62.77 P-value <0.0001			

Table A-16: Familiarity with panelized housing by gender

Familiarity with panelized housing by gender			
Familiarity with panelized housing	Gender		Total
	Female	Male	
Not familiar 1	5814 74.90%	1372 55.46%	7186
2	840 10.82%	415 16.77%	1255
3	577 7.43%	329 13.30%	906
4	245 3.16%	163 6.59%	408
Very familiar 5	286 3.68%	195 7.88%	481
Total	7762	2474	10236
Chi-square = 353.95 P-value <0.0001			

Table A-17: Familiarity with site-built housing by region

Familiarity with site-built housing by region						
Familiarity with site-built housing	Region					Total
	Northeast	Midwest	South	West	Canada	
Not familiar 1	348 18.86%	387 14.41%	444 12.61%	339 15.37%	1 14.29%	1519
2	134 7.26%	180 6.70%	222 6.30%	140 6.35%	0 0.00%	676
3	346 18.75%	459 17.09%	520 14.76%	308 13.96%	1 14.29%	1634
4	364 19.73%	541 20.15%	711 20.19%	416 18.86%	1 14.29%	2033
Very familiar 5	653 35.39%	1118 41.64%	1625 46.14%	1003 45.47%	4 57.14%	4403
Total	1845	2685	3522	2206	7	10265
Chi-square = 94.21						
P-value <0.0001						

Table A-18: Familiarity with manufactured housing by region

Familiarity with manufactured housing by region						
Familiarity with manufactured housing	Region					Total
	Northeast	Midwest	South	West	Canada	
Not familiar 1	337 18.27%	301 11.21%	399 11.33%	248 11.24%	2 28.57%	1287
2	243 13.17%	317 11.81%	372 10.56%	253 11.47%	1 14.29%	1186
3	468 25.37%	648 24.13%	766 21.75%	476 21.58%	2 28.57%	2360
4	393 21.30%	624 23.24%	805 22.86%	498 22.57%	0 0.00%	2320
Very familiar 5	404 21.90%	795 29.61%	1180 33.50%	731 33.14%	2 28.57%	3112
Total	1845	2685	3522	2206	7	10265
Chi-square = 143.08						
P-value <0.0001						

Table A-19: Familiarity with modular housing by region

Familiarity with modular housing by region						
Familiarity with modular housing	Region					Total
	Northeast	Midwest	South	West	Canada	
Not familiar 1	304 16.48%	379 14.12%	743 21.10%	483 21.89%	1 14.29%	1910
2	252 13.66%	349 13.00%	490 13.91%	370 16.77%	1 14.29%	1462
3	482 26.12%	721 26.85%	820 23.28%	481 21.80%	3 42.86%	2507
4	388 21.03%	556 20.71%	650 18.46%	408 18.50%	0 0.00%	2002
Very familiar 5	419 22.71%	680 25.33%	819 23.25%	464 21.03%	2 28.57%	2384
Total	1845	2685	3522	2206	7	10265
Chi-square = 108.15						
P-value <0.0001						

Table A-20: Familiarity with panelized housing by region

Familiarity with panelized housing by region						
Familiarity with panelized housing	Region					Total
	Northeast	Midwest	South	West	Canada	
Not familiar 1	1300 70.46%	1805 67.23%	2528 71.78%	1568 71.11%	5 71.43%	7206
2	221 11.98%	366 13.63%	398 11.30%	273 12.38%	1 14.29%	1259
3	171 9.27%	261 9.72%	300 8.52%	175 7.94%	1 14.29%	908
4	78 4.23%	107 3.99%	126 3.58%	98 4.44%	0 0.00%	409
Very familiar 5	75 4.07%	146 5.44%	170 4.83%	91 4.13%	0 0.00%	482
Total	1845	2685	3522	2205	7	10264
Chi-square = 27.13						
P-value <=0.04						

Table A-21: Familiarity with site-built housing by types of homes lived in

Familiarity with site-built housing by type of homes lived in						
Familiarity with site-built housing	Type of homes lived in					Total
	Site-built	Manufactured	Modular	Panelized	Two or more types	
Not familiar 1	891 14.52%	164 34.97%	37 28.24%	26 55.32%	271 8.30%	1389
2	396 6.45%	57 12.15%	18 13.74%	3 6.38%	184 5.64%	658
3	990 16.13%	82 17.48%	36 27.48%	10 21.28%	478 14.64%	1596
4	1222 19.92%	70 14.93%	13 9.92%	3 6.38%	711 21.78%	2019
Very familiar 5	2637 42.98%	96 20.47%	27 20.61%	5 10.64%	1620 49.63%	4385
Total	6136	469	131	47	3264	10047
Chi-square = 492.13						
P-value <0.0001						

Table A-22: Familiarity with manufactured housing by types of homes lived in

Familiarity with manufactured housing by type of homes lived in						
Familiarity with manufactured housing	Type of homes lived in					Total
	Site-built	Manufactured	Modular	Panelized	Two or more types	
Not familiar 1	900 14.67%	89 18.98%	21 16.03%	23 48.94%	153 4.69%	1186
2	863 14.06%	52 11.09%	24 18.32%	3 6.38%	213 6.53%	1155
3	1643 26.78%	84 17.91%	23 17.56%	10 21.28%	555 17.00%	2315
4	1376 22.43%	67 14.29%	21 16.03%	7 14.89%	826 25.31%	2297
Very familiar 5	1354 22.07%	177 37.74%	42 32.06%	4 8.51%	1517 46.48%	3094
Total	6136	469	131	47	3264	10047
Chi-square = 923.25						
P-value <0.0001						

Table A-23: Familiarity with modular housing by types of homes lived in

Familiarity with modular housing by type of homes lived in						
Familiarity with modular housing	Type of homes lived in					Total
	Site-built	Manufactured	Modular	Panelized	Two or more types	
Not familiar 1	1286 20.96%	140 29.85%	26 19.85%	25 53.19%	323 9.90%	1800
2	1007 16.41%	54 11.51%	14 10.69%	4 8.51%	356 10.91%	1435
3	1624 26.47%	97 20.68%	25 19.08%	9 19.15%	704 21.57%	2459
4	1119 18.24%	59 12.58%	24 18.32%	5 10.64%	776 23.77%	1983
Very familiar 5	1100 17.93%	119 25.37%	42 32.06%	4 8.51%	1105 33.85%	2370
Total	6136	469	131	47	3264	10047
Chi-square = 582.04						
P-value <0.0001						

Table A-24: Familiarity with panelized housing by types of homes lived in

Familiarity with panelized housing by type of homes lived in						
Familiarity with panelized housing	Type of homes lived in					Total
	Site-built	Manufactured	Modular	Panelized	Two or more types	
Not familiar 1	4400 71.71%	353 75.27%	85 64.89%	31 65.96%	2159 66.15%	7028
2	738 12.03%	52 11.09%	16 12.21%	3 6.38%	433 13.27%	1242
3	540 8.80%	31 6.61%	15 11.45%	6 12.77%	300 9.19%	892
4	219 3.57%	13 2.77%	7 5.34%	2 4.26%	166 5.09%	407
Very familiar 5	239 3.90%	20 4.26%	8 6.11%	5 10.64%	206 6.31%	478
Total	6136	469	131	47	3264	10047
Chi-square = 66.43						
P-value <0.0001						

Table A-25 Ratings on resale value and property appreciation by housing type

Housing type	Resale value and property appreciation				
	Poor 1	2	3	4	Excellent 5
Site-built	1.24%	2.35%	18.34%	36.31%	41.77%
Manufactured	14.05%	27.30%	34.62%	16.11%	7.93%
Modular	4.34%	10.80%	31.92%	33.94%	18.99%
Panelized	3.06%	9.48%	31.91%	35.66%	19.88%

Table A-26: Ratings on overall value by housing type

Housing type	Overall value: The most for the money				
	Poor 1	2	3	4	Excellent 5
Site-built	1.19%	3.7%	23.50%	37.94%	33.67%
Manufactured	7.12%	18.50%	34.23%	25.43%	14.72%
Modular	3.40%	9.09%	32.99%	34.29%	20.23%
Panelized	2.51%	8.74%	33.44%	36.40%	18.92%

Table A-27: Ratings on availability on financing by housing type

Housing type	Availability of financing				
	Poor 1	2	3	4	Excellent 5
Site-built	0.95%	2.21%	18.52%	37.83%	40.49%
Manufactured	5.85%	15.01%	33.99%	28.52%	16.63%
Modular	3.04%	8.15%	31.57%	35.34%	21.90%
Panelized	2.22%	7.16%	31.72%	36.64%	22.26%

Table A-28: Ratings on quality of surrounding neighborhood by housing type

Housing type	Quality of the surrounding neighborhood				
	Poor 1	2	3	4	Excellent 5
Site-built	1.10%	3.53%	19.24%	36.58%	39.55%
Manufactured	11.03%	24.48%	33.77%	19.24%	11.48%
Modular	3.61%	8.63%	31.57%	34.25%	21.94%
Panelized	2.69%	8.84%	32.81%	34.82%	20.84%

Table A-29: Ratings on ability to quickly construct with varied design features by housing type

Housing type	Ability to quickly construct with varied design features				
	Poor 1	2	3	4	Excellent 5
Site-built	1.85%	6.87%	26.74%	35.86%	28.68%
Manufactured	5.20%	10.72%	22.67%	32.00%	29.41%
Modular	2.69%	6.69%	25.90%	37.64%	27.08%
Panelized	2.03%	7.23%	27.64%	38.74%	24.36%

Table A-30: Ratings on whether quality of construction is durable and has a warranty by housing type

Housing type	Quality of construction is durable and has a warranty				
	Poor 1	2	3	4	Excellent 5
Site-built	1.76%	5.10%	20.72%	34.93%	37.49%
Manufactured	8.98%	20.65%	31.98%	23.28%	15.12%
Modular	4.05%	11.89%	32.64%	31.84%	19.58%
Panelized	2.73%	10.24%	32.49%	34.18%	20.36%

Table A-31: Ratings on impact on the look and feel by housing type

Housing type	Impact on the look and feel of the home				
	Poor 1	2	3	4	Excellent 5
Site-built	1.58%	3.71%	19.45%	35.08%	40.18%
Manufactured	10.68%	22.85%	32.41%	21.14%	12.92%
Modular	4.01%	9.92%	30.34%	33.48%	22.25%
Panelized	3.51%	10.67%	32.21%	33.34%	20.27%

Table A-32: Mean ratings of resale value by income and housing type

Income Group	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Less than \$20,000	4.16	0.03	3.03	0.04	3.72	0.04	3.80	0.03
\$20,001-\$40,000	4.19	0.02	2.92	0.02	3.66	0.02	3.72	0.02
\$40,001-\$60,000	4.22	0.02	2.77	0.02	3.55	0.02	3.62	0.02
\$60,001-\$80,000	4.14	0.02	2.65	0.03	3.45	0.03	3.54	0.03
Greater than \$80,000	4.07	0.02	2.53	0.03	3.30	0.03	3.38	0.03

Table A-33: Mean ratings of overall value by income and housing type

Income Group	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Less than \$20,000	4.03	0.03	3.46	0.04	3.75	0.03	3.78	0.03
\$20,001-\$40,000	4.03	0.02	3.35	0.02	3.69	0.02	3.69	0.02
\$40,001-\$60,000	4.04	0.02	3.22	0.02	3.62	0.02	3.63	0.02
\$60,001-\$80,000	3.98	0.03	3.12	0.03	3.52	0.03	3.54	0.03
Greater than \$80,000	3.89	0.02	3.06	0.03	3.44	0.03	3.45	0.03

Table A-34: Mean ratings of availability of financing by income and housing type

Income Group	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Less than \$20,000	4.10	0.03	3.50	0.04	3.80	0.03	3.84	0.03
\$20,001-\$40,000	4.15	0.02	3.46	0.02	3.73	0.02	3.78	0.02
\$40,001-\$60,000	4.18	0.02	3.36	0.03	3.66	0.02	3.71	0.02
\$60,001-\$80,000	4.19	0.02	3.31	0.03	3.61	0.03	3.66	0.03
Greater than \$80,000	4.12	0.02	3.18	0.03	3.50	0.03	3.55	0.03

Table A-35: Mean ratings of quality of neighborhood by income and housing type

Income Group	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Less than \$20,000	4.08	0.04	3.34	0.04	3.84	0.04	3.87	0.04
\$20,001-\$40,000	4.14	0.02	3.17	0.02	3.75	0.02	3.75	0.02
\$40,001-\$60,000	4.14	0.02	2.96	0.03	3.67	0.02	3.66	0.02
\$60,001-\$80,000	4.12	0.03	2.81	0.03	3.56	0.03	3.54	0.03
Greater than \$80,000	4.00	0.03	2.58	0.03	3.35	0.03	3.35	0.03

Table A-36: Mean ratings of ability to quickly construct with varied design features by income and housing type

Income Group	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Less than \$20,000	3.85	0.03	3.87	0.04	3.92	0.03	3.92	0.03
\$20,001-\$40,000	3.90	0.02	3.79	0.02	3.88	0.02	3.84	0.02
\$40,001-\$60,000	3.81	0.02	3.73	0.02	3.81	0.02	3.79	0.02
\$60,001-\$80,000	3.82	0.03	3.64	0.03	3.75	0.03	3.71	0.03
Greater than \$80,000	3.72	0.03	3.53	0.03	3.66	0.03	3.58	0.03

Table A-37: Mean ratings of quality of construction by income and housing type

Income Group	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Less than \$20,000	4.06	0.04	3.42	0.04	3.70	0.04	3.80	0.04
\$20,001-\$40,000	4.06	0.02	3.29	0.02	3.62	0.02	3.70	0.02
\$40,001-\$60,000	4.04	0.02	3.18	0.03	3.55	0.02	3.61	0.02
\$60,001-\$80,000	4.01	0.03	3.02	0.03	3.41	0.03	3.54	0.03
Greater than \$80,000	3.91	0.03	2.91	0.03	3.33	0.03	3.39	0.03

Table A-38: Mean ratings of impact on look and feel by income and housing type

Income Group	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Less than \$20,000	4.11	0.03	3.38	0.04	3.82	0.04	3.78	0.03
\$20,001-\$40,000	4.15	0.02	3.26	0.02	3.75	0.02	3.70	0.02
\$40,001-\$60,000	4.13	0.02	3.04	0.03	3.63	0.02	3.60	0.02
\$60,001-\$80,000	4.08	0.03	2.86	0.03	3.53	0.03	3.50	0.03
Greater than \$80,000	3.95	0.03	2.64	0.03	3.33	0.03	3.29	0.03

Table A-39: Mean ratings of resale value by race and housing type

Race	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
White	4.17	0.01	2.75	0.01	3.53	0.01	3.60	0.01
African American or Black	4.04	0.05	3.03	0.05	3.63	0.05	3.60	0.05
Native American	4.15	0.10	2.87	0.12	3.61	0.11	3.71	0.11
Asian American	3.84	0.09	2.77	0.11	3.43	0.11	3.51	0.09
Other	4.01	0.07	2.76	0.08	3.51	0.08	3.59	0.07

Table A-40: Mean ratings of overall value by race and housing type

Race	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
White	4.00	0.01	3.22	0.01	3.59	0.01	3.61	0.01
African American or Black	3.99	0.05	3.25	0.05	3.63	0.05	3.59	0.05
Native American	4.00	0.11	3.38	0.12	3.63	0.12	3.71	0.10
Asian American	3.79	0.09	3.10	0.11	3.62	0.10	3.58	0.09
Other	3.92	0.07	3.30	0.08	3.53	0.08	3.59	0.07

Table A-41: Mean ratings of availability of financing by race and housing type

Race	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
White	4.16	0.01	3.35	0.01	3.65	0.01	3.71	0.01
African American or Black	4.09	0.04	3.38	0.05	3.67	0.05	3.62	0.05
Native American	3.97	0.11	3.47	0.12	3.81	0.12	3.94	0.11
Asian American	3.98	0.09	3.25	0.11	3.59	0.10	3.60	0.09
Other	4.02	0.07	3.44	0.09	3.70	0.08	3.72	0.07

Table A-42: Mean ratings of quality of neighborhood by race and housing type

Race	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
White	4.11	0.01	2.94	0.01	3.62	0.01	3.63	0.01
African American or Black	4.12	0.05	3.23	0.06	3.69	0.05	3.63	0.05
Native American	4.00	0.11	2.90	0.13	3.69	0.13	3.73	0.12
Asian American	3.92	0.09	2.93	0.11	3.66	0.10	3.55	0.10
Other	3.99	0.08	3.09	0.10	3.58	0.09	3.62	0.09

Table A-43: Mean ratings of ability to quickly construct varied design features by race and housing type

Race	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
White	3.82	0.01	3.71	0.01	3.81	0.01	3.77	0.01
African American or Black	4.01	0.04	3.67	0.05	3.75	0.05	3.71	0.05
Native American	3.76	0.11	3.55	0.12	3.83	0.11	3.95	0.10
Asian American	3.75	0.10	3.43	0.11	3.69	0.10	3.60	0.08
Other	3.67	0.07	3.80	0.09	3.82	0.07	3.86	0.07

Table A-44: Mean ratings of quality of construction by race and housing type

Race	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
White	4.02	0.01	3.15	0.01	3.51	0.01	3.59	0.01
African American or Black	4.02	0.05	3.24	0.06	3.58	0.05	3.61	0.05
Native American	3.92	0.12	3.19	0.13	3.62	0.12	3.80	0.11
Asian American	3.84	0.10	2.98	0.10	3.44	0.10	3.57	0.09
Other	3.90	0.08	3.17	0.09	3.50	0.08	3.60	0.07

Table A-45: Mean ratings of impact on look and feel by race and housing type

Race	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
White	4.10	0.01	3.02	0.01	3.60	0.01	3.56	0.01
African American or Black	4.10	0.05	3.26	0.05	3.72	0.05	3.66	0.05
Native American	4.02	0.11	3.11	0.12	3.65	0.12	3.65	0.12
Asian American	3.87	0.09	2.97	0.11	3.55	0.10	3.41	0.09
Other	3.97	0.08	3.05	0.09	3.58	0.08	3.60	0.08

Table A-46: Mean ratings of resale value by educational attainment and housing type

Educational Attainment	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
High school graduate or less	4.22	0.02	3.04	0.03	3.70	0.03	3.79	0.02
Some college	4.21	0.02	2.78	0.02	3.57	0.02	3.67	0.02
College graduate	4.10	0.02	2.65	0.02	3.43	0.02	3.47	0.02
Professional or graduate degree	3.99	0.03	2.58	0.03	3.33	0.03	3.38	0.03
Other	4.16	0.10	2.78	0.11	3.67	0.11	3.75	0.10

Table A-47: Mean ratings of overall value by educational attainment and housing type

Educational attainment	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
High school graduate or less	4.11	0.02	3.40	0.03	3.73	0.03	3.76	0.02
Some college	4.05	0.02	3.26	0.02	3.62	0.02	3.66	0.02
College graduate	3.92	0.02	3.13	0.02	3.52	0.02	3.50	0.02
Professional or graduate degree	3.81	0.03	3.06	0.03	3.45	0.03	3.44	0.03
Other	3.89	0.10	3.17	0.12	3.60	0.11	3.69	0.10

Table A-48: Mean ratings of availability of financing by educational attainment and housing type

Educational attainment	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
High school graduate or less	4.18	0.02	3.51	0.03	3.76	0.03	3.82	0.02
Some college	4.20	0.02	3.36	0.02	3.68	0.02	3.73	0.02
College graduate	4.09	0.02	3.27	0.02	3.58	0.02	3.62	0.02
Professional or graduate degree	4.09	0.03	3.26	0.03	3.53	0.03	3.56	0.03
Other	4.25	0.08	3.45	0.12	3.81	0.11	3.80	0.11

Table A-49: Mean ratings of quality of neighborhood by educational attainment and housing type

Educational attainment	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
High school graduate or less	4.20	0.02	3.30	0.03	3.82	0.03	3.82	0.03
Some college	4.14	0.02	3.01	0.02	3.67	0.02	3.69	0.02
College graduate	4.03	0.02	2.78	0.02	3.51	0.02	3.49	0.02
Professional or graduate degree	3.96	0.03	2.65	0.04	3.40	0.04	3.39	0.03
Other	4.19	0.11	3.05	0.13	3.94	0.11	3.77	0.12

Table A-50: Mean ratings of ability to quickly construct varied design features by educational attainment and housing type

Educational attainment	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
High school graduate or less	3.98	0.02	3.84	0.03	3.91	0.02	3.89	0.02
Some college	3.89	0.02	3.73	0.02	3.83	0.02	3.82	0.02
College graduate	3.72	0.02	3.61	0.02	3.74	0.02	3.66	0.02
Professional or graduate degree	3.67	0.03	3.58	0.03	3.67	0.03	3.64	0.03
Other	3.81	0.10	3.78	0.12	3.91	0.10	3.85	0.10

Table A-51: Mean ratings of quality of construction by educational attainment and housing type

Educational attainment	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
High school graduate or less	4.17	0.02	3.40	0.03	3.70	0.03	3.77	0.03
Some college	4.08	0.02	3.20	0.02	3.56	0.02	3.66	0.02
College graduate	3.90	0.02	3.00	0.02	3.39	0.02	3.45	0.02
Professional or graduate degree	3.85	0.03	2.94	0.03	3.33	0.03	3.42	0.03
Other	3.99	0.11	3.25	0.13	3.62	0.11	3.75	0.11

Table A-52: Mean ratings of impact on look and feel by educational attainment and housing type

Educational attainment	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
High school graduate or less	4.25	0.02	3.40	0.03	3.82	0.03	3.78	0.03
Some college	4.15	0.02	3.10	0.02	3.67	0.02	3.65	0.02
College graduate	3.98	0.02	2.84	0.02	3.48	0.02	3.41	0.02
Professional or graduate degree	3.89	0.03	2.70	0.03	3.34	0.03	3.31	0.03
Other	3.99	0.11	2.98	0.13	3.73	0.10	3.69	0.10

Table A-53: Mean ratings of resale value by census region and housing type

Census region	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Northeast	4.13	0.02	3.00	0.03	3.69	0.03	3.63	0.03
Midwest	4.21	0.02	2.86	0.02	3.57	0.02	3.66	0.02
South	4.08	0.02	2.57	0.02	3.41	0.02	3.50	0.02
West	4.21	0.02	2.77	0.02	3.52	0.02	3.66	0.02

Table A-54: Mean ratings of overall value by census region and housing type

Census region	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Northeast	3.96	0.02	3.37	0.03	3.70	0.03	3.62	0.03
Midwest	4.05	0.02	3.27	0.02	3.63	0.02	3.66	0.02
South	3.97	0.02	3.06	0.02	3.47	0.02	3.51	0.02
West	3.99	0.02	3.31	0.03	3.63	0.02	3.68	0.02

Table A-55: Mean ratings of availability of financing by census region and housing type

Census region	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Northeast	4.09	0.02	3.53	0.03	3.78	0.03	3.74	0.03
Midwest	4.20	0.02	3.41	0.02	3.70	0.02	3.75	0.02
South	4.13	0.02	3.23	0.02	3.55	0.02	3.59	0.02
West	4.17	0.02	3.34	0.03	3.65	0.02	3.76	0.02

Table A-56: Mean ratings of quality of neighborhood by census region and housing type

Census region	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Northeast	4.09	0.03	3.14	0.03	3.75	0.03	3.66	0.03
Midwest	4.18	0.02	3.00	0.03	3.68	0.02	3.67	0.02
South	4.06	0.02	2.81	0.02	3.49	0.02	3.54	0.02
West	4.08	0.02	2.99	0.03	3.67	0.03	3.68	0.03

Table A-57: Mean ratings of ability to quickly construct varied design features by census region and housing type

Census region	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Northeast	3.85	0.02	3.72	0.03	3.86	0.02	3.75	0.02
Midwest	3.88	0.02	3.72	0.02	3.81	0.02	3.79	0.02
South	3.83	0.02	3.64	0.02	3.72	0.02	3.70	0.02
West	3.74	0.02	3.75	0.03	3.86	0.02	3.84	0.02

Table A-58: Mean ratings of quality of construction by census region and housing type

Census region	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Northeast	3.97	0.03	3.30	0.03	3.64	0.03	3.59	0.03
Midwest	4.10	0.02	3.21	0.02	3.56	0.02	3.66	0.02
South	3.97	0.02	2.96	0.02	3.38	0.02	3.49	0.02
West	4.01	0.02	3.26	0.03	3.56	0.03	3.67	0.02

Table A-59: Mean ratings of impact on look and feel by census region and housing type

Census region	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Northeast	4.04	0.02	3.16	0.03	3.70	0.03	3.54	0.03
Midwest	4.16	0.02	3.09	0.02	3.65	0.02	3.63	0.02
South	4.05	0.02	2.90	0.02	3.49	0.02	3.47	0.02
West	4.09	0.02	3.05	0.03	3.63	0.02	3.64	0.02

Table A-60: Mean ratings of resale value by type of homes lived in and housing type

Type of homes lived in	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Site-built	4.12	0.01	2.66	0.01	3.41	0.01	3.47	0.01
Manufactured	4.05	0.05	3.21	0.06	3.85	0.05	3.84	0.05
Modular	3.92	0.10	3.44	0.12	3.95	0.10	4.02	0.09
Panelized	4.03	0.20	3.32	0.24	3.94	0.23	3.94	0.21
Two or more types	4.25	0.02	2.86	0.02	3.68	0.02	3.79	0.02

Table A-61: Mean ratings of overall value by type of homes lived in and housing type

Type of homes lived in	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Site-built	3.97	0.01	3.09	0.02	3.48	0.01	3.48	0.01
Manufactured	4.02	0.05	3.49	0.06	3.89	0.05	3.80	0.05
Modular	3.87	0.09	3.76	0.11	3.90	0.10	3.98	0.09
Panelized	3.93	0.22	3.52	0.20	3.94	0.21	3.94	0.21
Two or more types	4.05	0.02	3.40	0.02	3.74	0.02	3.79	0.02

Table A-62: Mean ratings of availability of financing by type of homes lived in and housing type

Type of homes lived in	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Site-built	4.13	0.01	3.26	0.02	3.55	0.01	3.59	0.01
Manufactured	4.07	0.05	3.55	0.06	3.94	0.05	3.89	0.05
Modular	4.06	0.09	3.83	0.11	3.92	0.10	4.00	0.08
Panelized	3.97	0.20	3.66	0.19	3.97	0.20	3.97	0.20
Two or more types	4.21	0.02	3.47	0.02	3.78	0.02	3.85	0.02

Table A-63: Mean ratings of quality of neighborhood by type of homes lived in and housing type

Type of homes lived in	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Site-built	4.08	0.01	2.80	0.02	3.49	0.02	3.49	0.02
Manufactured	4.05	0.05	3.41	0.06	3.93	0.05	3.83	0.05
Modular	4.05	0.09	3.71	0.11	4.02	0.09	3.98	0.09
Panelized	3.93	0.20	3.59	0.17	4.03	0.19	3.82	0.21
Two or more types	4.17	0.02	3.14	0.02	3.82	0.02	3.82	0.02

Table A-64: Mean ratings of ability to quickly construct design features by type of homes lived in and housing type

Type of homes lived in	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Site-built	3.79	0.01	3.58	0.02	3.70	0.01	3.65	0.01
Manufactured	3.99	0.05	3.73	0.06	3.95	0.05	3.90	0.05
Modular	4.07	0.09	4.09	0.09	3.94	0.09	3.89	0.10
Panelized	3.93	0.20	3.74	0.18	3.97	0.20	3.94	0.19
Two or more types	3.85	0.02	3.90	0.02	3.96	0.02	3.94	0.02

Table A-65: Mean ratings of quality of construction by type of homes lived in and housing type

Type of homes lived in	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Site-built	3.97	0.01	3.01	0.02	3.38	0.02	3.46	0.01
Manufactured	4.04	0.05	3.43	0.06	3.81	0.05	3.84	0.05
Modular	3.96	0.10	3.65	0.11	3.81	0.10	3.99	0.09
Panelized	3.97	0.22	3.58	0.19	3.88	0.20	3.97	0.20
Two or more types	4.10	0.02	3.34	0.02	3.69	0.02	3.78	0.02

Table A-66: Mean ratings of impact on look and feel by type of homes lived in and housing type

Type of homes lived in	Site-built		Manufactured		Modular		Panelized	
	Mean	Standard error	Mean	Standard error	Mean	Standard error	Mean	Standard error
Site-built	4.03	0.01	2.82	0.02	3.45	0.01	3.40	0.01
Manufactured	4.14	0.05	3.49	0.06	3.93	0.05	3.86	0.05
Modular	4.09	0.10	3.73	0.10	3.94	0.10	3.81	0.10
Panelized	4.06	0.19	3.59	0.20	4.00	0.22	3.85	0.21
Two or more types	4.19	0.02	3.31	0.02	3.81	0.02	3.80	0.02

Table A-67: Likelihood to consider purchasing site-built homes by income

Table of income by likelihood to purchase site-built homes			
Income	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
Less than \$20,000	107 12.51%	748 87.49%	855
\$20,001-\$40,000	196 8.98%	1987 91.02%	2183
\$40,001-\$60,000	165 8.50%	1777 91.50%	1942
\$60,001-\$80,000	119 9.36%	1152 90.64%	1271
Greater than \$80,000	157 10.08%	1400 89.92%	1557
Total	744	7064	7808
Chi-square=12.61			
P-value <=0.01			

Table A-68: Likelihood to consider purchasing manufactured homes by income

Table of income by likelihood to purchase manufactured homes			
Income	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
Less than \$20,000	371 50.68%	361 49.32%	732
\$20,001-\$40,000	1124 58.88%	785 41.12%	1909
\$40,001-\$60,000	1220 71.55%	485 28.45%	1705
\$60,001-\$80,000	877 76.46%	270 23.54%	1147
Greater than \$80,000	1181 82.53%	250 17.47%	1431
Total	4773	2151	6924
Chi-square=363.31			
P-value <=0.0001			

Table A-69: Likelihood to consider purchasing modular homes by income

Table of income by likelihood to purchase modular homes			
Income	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
Less than \$20,000	228 31.75%	490 68.25%	718
\$20,001-\$40,000	567 31.89%	1211 68.11%	1778
\$40,001-\$60,000	627 40.93%	905 59.07%	1532
\$60,001-\$80,000	482 47.16%	540 52.84%	1022
Greater than \$80,000	743 60.11%	493 39.89%	1236
Total	2647	3639	6286
Chi-square=283.69			
P-value <0.0001			

Table A-70: Likelihood to consider purchasing panelized home by income

Table of income by likelihood to purchase panelized homes			
Income	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
Less than \$20,000	193 25.70%	558 74.30%	751
\$20,001-\$40,000	555 30.80%	1247 69.20%	1802
\$40,001-\$60,000	592 38.90%	930 61.10%	1522
\$60,001-\$80,000	415 40.77%	603 59.23%	1018
Greater than \$80,000	690 54.37%	579 45.63%	1269
Total	2445	3917	6362
Chi-square=234.60			
P-value <0.0001			

Table A-71: Likelihood to consider purchasing site-built homes by education

Table of education by likelihood to purchase site-built homes			
Education	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
High school graduate or less	164 10.22%	1440 89.78%	1604
Some college	285 9.04%	2869 90.96%	3154
College graduate	244 9.91%	2219 90.09%	2463
Professional or graduate degree	121 10.93%	986 89.07%	1107
Other	10 10.20%	88 89.8%	98
Total	824	7602	8426
Chi-square=4.06			
P-value <=0.40			

Table A-72: Likelihood to consider purchasing manufactured homes by education

Table of education by likelihood to purchase manufactured homes			
Education	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
High school graduate or less	758 54.34%	637 45.66%	1395
Some college	1876 67.70%	895 32.30%	2771
College graduate	1690 76.02%	533 23.98%	2223
Professional or graduate degree	805 80.58%	194 19.42%	999
Other	54 58.70%	38 41.30%	92
Total	5183	2297	7480
Chi-square=261.94			
P-value <0.0001			

Table A-73: Likelihood to consider purchasing modular homes by education

Table of education by likelihood to purchase modular homes			
Education	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
High school graduate or less	444 33.38%	886 66.62%	1330
Some college	976 38.85%	1536 61.15%	2512
College graduate	959 48.93%	1001 51.07%	1960
Professional or graduate degree	487 55.15%	396 44.85%	883
Other	30 36.14%	53 63.86%	83
Total	2896	3872	6768
Chi-square=150.77			
P-value <0.0001			

Table A-74: Likelihood to consider purchasing panelized homes by education

Table of education by likelihood to purchase panelized homes			
Education	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
High school graduate or less	397 29.89%	931 70.11%	1328
Some college	916 35.74%	1647 64.26%	2563
College graduate	886 44.77%	1093 55.23%	1979
Professional or graduate degree	443 49.17%	458 50.83%	901
Other	36 39.13%	56 60.87%	92
Total	2678	4185	6863
Chi-square=124.56			
P-value <0.0001			

Table A-75: Likelihood to consider purchasing site-built homes by census region

Table of census region by likelihood to purchase site-built homes			
Census region	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
Northeast	169 11.53%	1297 88.47%	1466
Midwest	203 9.15%	2016 90.85%	2219
South	290 9.88%	2645 90.12%	2935
West	165 9.08%	1653 90.92%	1818
Total	827	7611	8438
Chi-square=7.12			
P-value <=0.07			

Table A-76: Likelihood to consider purchasing manufactured homes by census region

Table of census region by likelihood to purchase manufactured homes			
Census region	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
Northeast	794 61.84%	490 38.16%	1284
Midwest	1356 70.08%	579 29.92%	1935
South	1946 73.63%	697 26.37%	2643
West	1096 67.40%	530 32.60%	1626
Total	5192	2296	7488
Chi-square=60.21			
P-value <0.0001			

Table A-77: Likelihood to consider purchasing modular homes by census region

Table of census region by likelihood to purchase modular homes			
Census region	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
Northeast	440 36.45%	767 63.55%	1207
Midwest	740 41.39%	1048 58.61%	1788
South	1135 48.26%	1217 51.74%	2352
West	590 41.23%	841 58.77%	1431
Total	2905	3873	6778

Table of census region by likelihood to purchase modular homes			
Census region	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
Chi-square=51.33 P-value <0.0001			

Table A-78: Likelihood to consider purchasing panelized homes by census region

Table of census region by likelihood to purchase modular homes			
Census region	Likelihood to consider purchasing		Total
	very unlikely (1 or 2)	very likely (4 or 5)	
Northeast	478 39.34%	737 60.66%	1215
Midwest	670 36.98%	1142 63.02%	1812
South	1014 42.98%	1345 57.02%	2359
West	522 35.10%	965 64.90%	1487
Total	2684	4189	6873
Chi-square=28.39 P-value <0.0001			

Table A-79: Mean scores on familiarity with site-built homes by likelihood to consider purchasing site-built homes

Familiarity	Likelihood to consider purchasing	
	very unlikely	very likely
Mean	3.36	3.91
Standard error	0.06	0.02
N	828	7616
T-statistic =-9.56 P-value<.0001		

Table A-80: Mean scores on familiarity with manufactured homes by likelihood to consider purchasing manufactured homes

Familiarity	Likelihood to consider purchasing	
	very unlikely (1 or 2)	very likely (4 or 5)
Mean	3.39	3.87
Standard error	0.02	0.03
N	5196	2300
T-statistic =-15.18 P-value<.0001		

Table A-81: Mean scores on familiarity with modular homes by likelihood to consider purchasing modular homes

Familiarity	Likelihood to consider purchasing	
	very unlikely (1 or 2)	very likely (4 or 5)
Mean	2.96	3.46
Standard error	0.03	0.02
N	2906	3878
T-statistic = -14.61 P-value < .0001		

Table A-82: Mean scores on familiarity with panelized homes by likelihood to consider purchasing panelized homes

Familiarity	Likelihood to consider purchasing	
	very unlikely (1 or 2)	very likely (4 or 5)
Mean	1.50	1.76
Standard error	0.02	0.02
N	2684	4194
T-statistic = -9.62 P-value < .0001		

Table A-83: Mean scores on the importance of housing factors by likelihood to consider purchasing site-built homes

Housing factor	Mean score		T-statistic	P-value
	very unlikely (1 or 2)	very likely (4 or 5)		
Resale value	4.53	4.69	-4.35	<0.0001
Overall value	4.69	4.79	-3.73	0.0002
Availability of financing	4.43	4.57	-3.84	0.0001
Quality of neighborhood	4.64	4.74	-3.39	0.0007
Ability to construct varied design features	3.71	3.71	0.01	0.9919
Quality of construction	4.75	4.80	-2.01	0.0443
Impact on look and feel	4.61	4.67	-1.93	0.0538

Table A-84: Mean scores on the importance of housing factors by likelihood to consider purchasing manufactured homes

Housing factor	Mean score		T-statistic	P-value
	very unlikely (1 or 2)	very likely (4 or 5)		
Resale value	4.71	4.59	5.97	<.0001
Overall value	4.78	4.80	-1.86	0.0628
Availability of financing	4.52	4.64	-6.01	<.0001
Quality of neighborhood	4.77	4.65	7.15	<.0001
Ability to construct varied design features	3.52	4.06	-18.71	<.0001
Quality of construction	4.80	4.79	0.89	0.3719
Impact on look and feel	4.67	4.66	0.93	0.3523

Table A-85: Mean scores on the importance of housing factors by likelihood to consider purchasing modular homes

Housing factor	Mean score		T-statistic	P-value
	very unlikely (1 or 2)	very likely (4 or 5)		
Resale value	4.71	4.62	4.60	<.0001
Overall value	4.76	4.80	4.74	0.0036
Availability of financing	4.47	4.63	4.44	<.0001
Quality of neighborhood	4.77	4.69	4.75	<.0001
Ability to construct varied design features	3.45	3.94	3.40	<.0001
Quality of construction	4.80	4.80	4.77	0.6404
Impact on look and feel	4.68	4.67	4.65	0.9010

Table A-86: Mean scores on the importance of housing factors by likelihood to consider purchasing panelized homes

Housing factor	Mean score		T-statistic	P-value
	very unlikely (1 or 2)	very likely (4 or 5)		
Resale value	4.70	4.64	2.85	0.0043
Overall value	4.76	4.80	-2.54	0.0111
Availability of financing	4.47	4.61	-6.33	<.0001
Quality of neighborhood	4.76	4.68	4.77	<.0001
Ability to construct varied design features	3.50	3.89	-12.50	<.0001
Quality of construction	4.78	4.80	-1.52	0.1273
Impact on look and feel	4.68	4.66	1.22	0.2221

Table A-87: Mean scores on early adoption of technology by likelihood to consider purchasing site-built homes

Housing factor	Mean score		T-statistic	P-value
	very unlikely (1 or 2)	very likely (4 or 5)		
Eager to learn about new products	3.46	3.65	-4.29	<.0001
Learn to operate new products before I can afford to buy	2.86	2.98	-2.54	0.0112
Enjoy discovering new products and activities	3.66	3.84	-4.13	<.0001
Use the computer to find information	4.27	4.42	-4.12	<.0001
Often surf the Internet for fun	3.99	4.21	-5.08	<.0001
Buy new technical products before friends	2.45	2.64	-4.11	<.0001
Name brands do not matter when buying new technical products	3.09	3.10	-0.31	0.757

Table A-88: Mean scores on early adoption of technology by likelihood to consider purchasing manufactured homes

Housing factor	Mean score		T-statistic	P-value
	very unlikely (1 or 2)	very likely (4 or 5)		
Eager to lean about new products	3.56	3.71	-5.46	<.0001
Learn to operate new products before I can afford to buy	2.84	3.16	-10.15	<.0001
Enjoy discovering new products and activities	3.76	3.91	-5.50	<.0001
Use the computer to find information	4.42	4.38	2.07	0.0382
Often surf the Internet for fun	4.16	4.24	-3.00	0.0027
Buy new technical products before friends	2.58	2.68	-2.98	0.0029
Name brands do not matter when buying new technical products	2.99	3.30	-10.39	<.0001

Table A-89: Mean scores on early adoption of technology by likelihood to consider purchasing modular homes

Housing factor	Mean score		T-statistic	P-value
	very unlikely (1 or 2)	very likely (4 or 5)		
Eager to lean about new products	3.49	3.72	-8.51	<.0001
Learn to operate new products before I can afford to buy	2.79	3.09	-10.00	<.0001
Enjoy discovering new products and activities	3.69	3.92	-8.88	<.0001
Use the computer to find information	4.35	4.42	-3.28	0.001
Often surf the Internet for fun	4.10	4.26	-6.15	<.0001
Buy new technical products before friends	2.55	2.68	-4.09	<.0001
Name brands do not matter when buying new technical products	2.96	3.24	-9.44	<.0001

Table A-90: Mean scores on early adoption of technology by likelihood to consider purchasing panelized homes

Housing factor	Mean score		T-statistic	P-value
	very unlikely (1 or 2)	very likely (4 or 5)		
Eager to lean about new products	3.51	3.71	-7.12	<.0001
Learn to operate new products before I can afford to buy	2.76	3.11	-11.12	<.0001
Enjoy discovering new products and activities	3.69	3.91	-8.25	<.0001
Use the computer to find information	4.37	4.41	-1.68	0.0921
Often surf the Internet for fun	4.13	4.23	-3.57	0.0004
Buy new technical products before friends	2.55	2.70	-4.83	<.0001
Name brands do not matter when buying new technical products	2.95	3.21	-8.90	<.0001

Appendix B: Survey Instruments

Web-based Survey

(Introduction)

Thank you for the opportunity to share your thoughts on housing. HUD's Partnership for Advancing Technology in Housing, or PATH, has hired Optimal Solutions/NAHB Research Center to conduct a study on consumers and different types of home construction and their visual appearance. PATH will use this information to better disseminate its housing research. As part of the study, we are surveying homeowners like you on different home types.

The survey will take about 15 minutes. Participating in the survey is voluntary, and you can refuse to answer any question and you are not required to answer in order to obtain any benefit. The information we obtain from this survey will be presented only as statistical summaries. No individual respondents will be identified in our reports or the data we provide to HUD. You cannot be identified in any way. This survey is being conducted under OMB approval # 2528-0240.

Your opinions on housing are important to this study, and we hope you agree to participate.

Shall we begin?

["Yes" Click redirects to text below with following questions.]

["No" Click redirects to exit page, thanking respondent for their time.]

Q1. Are you a person between the ages of 21 and 70 who participates in your family's decisions about housing?

Yes _____ No _____

Q2. How familiar are you with the following types of homes?

Type of Home	Not Familiar				Very Familiar
Site-built	1	2	3	4	5
Manufactured	1	2	3	4	5
Modular	1	2	3	4	5
Panelized	1	2	3	4	5

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Q3. Which of the following statements are true for each of the following type of housing systems: *site-built, manufactured, panelized, and modular?* (check all that apply).

Construction Features	Site-built	Manufactured	Modular	Panelized	Do not know
Built to near-full completion in a factory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Material and components are transported to the home site in stacks on a truck	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Built on a steel frame with wheels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Can readily be moved to another site after initial placement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often comes in two halves that are joined together at the home site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Usually built or set on a permanent foundation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Largely constructed at the home site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often purchased from a retail home dealer's lot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Typically purchased through a home builder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Typically financed with a mortgage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q4. If you were to consider the purchase of a newly-constructed home, how important would the following factors be? (Please circle one number in each row.)

Factors	Not Important				Very Important	Do not know
Resale value and property appreciation	1	2	3	4	5	<input type="checkbox"/>
Overall value...the most for the money	1	2	3	4	5	<input type="checkbox"/>
Availability of financing to pay market purchase price	1	2	3	4	5	<input type="checkbox"/>
Quality of the surrounding neighborhood	1	2	3	4	5	<input type="checkbox"/>
Ability to quickly construct with varied design features	1	2	3	4	5	<input type="checkbox"/>
Quality of construction is durable and has a warranty	1	2	3	4	5	<input type="checkbox"/>
Impact on the look and feel of your home	1	2	3	4	5	<input type="checkbox"/>

Q5. How would you rate the factors at the bottom of this page for a home that looks and is constructed like the one in the three photos on this page?

PHOTO GROUP 1



Rating Factors (please circle one number in each row)	Poor				Excellent	Do not know
Resale value and property appreciation	1	2	3	4	5	<input type="checkbox"/>
Overall value...the most for the money	1	2	3	4	5	<input type="checkbox"/>
Availability of financing to pay market purchase price	1	2	3	4	5	<input type="checkbox"/>
Quality of the surrounding neighborhood	1	2	3	4	5	<input type="checkbox"/>
Ability to quickly construct with varied design features	1	2	3	4	5	<input type="checkbox"/>
Quality of construction is durable and has a warranty	1	2	3	4	5	<input type="checkbox"/>
Impact on the look and feel of your home	1	2	3	4	5	<input type="checkbox"/>

Q6. How would you rate the factors at the bottom of this page for a home that looks and is constructed like the one in the three photos on this page?

PHOTO GROUP 2



Rating Factors (please circle one number in each row)	Poor				Excellent	Do not know
Resale value and property appreciation	1	2	3	4	5	<input type="checkbox"/>
Overall value...the most for the money	1	2	3	4	5	<input type="checkbox"/>
Availability of financing to pay market purchase price	1	2	3	4	5	<input type="checkbox"/>
Quality of the surrounding neighborhood	1	2	3	4	5	<input type="checkbox"/>
Ability to quickly construct with varied design features	1	2	3	4	5	<input type="checkbox"/>
Quality of construction is durable and has a warranty	1	2	3	4	5	<input type="checkbox"/>
Impact on the look and feel of your home	1	2	3	4	5	<input type="checkbox"/>

Q7. How would you rate the factors at the bottom of this page for a home that looks and is constructed like the one in the three photos on this page?

PHOTO GROUP 3



Rating Factors (please circle one number in each row)	Poor				Excellent	Do not know
Resale value and property appreciation	1	2	3	4	5	<input type="checkbox"/>
Overall value...the most for the money	1	2	3	4	5	<input type="checkbox"/>
Availability of financing to pay market purchase price	1	2	3	4	5	<input type="checkbox"/>
Quality of the surrounding neighborhood	1	2	3	4	5	<input type="checkbox"/>
Ability to quickly construct with varied design features	1	2	3	4	5	<input type="checkbox"/>
Quality of construction is durable and has a warranty	1	2	3	4	5	<input type="checkbox"/>
Impact on the look and feel of your home	1	2	3	4	5	<input type="checkbox"/>

Q8. How would you rate the factors at the bottom of this page for a home that looks and is constructed like the one in the three photos on this page?

PHOTO GROUP 4



Rating Factors (please circle one number in each row)	Poor				Excellent	Do not know
Resale value and property appreciation	1	2	3	4	5	<input type="checkbox"/>
Overall value...the most for the money	1	2	3	4	5	<input type="checkbox"/>
Availability of financing to pay market purchase price	1	2	3	4	5	<input type="checkbox"/>
Quality of the surrounding neighborhood	1	2	3	4	5	<input type="checkbox"/>
Ability to quickly construct with varied design features	1	2	3	4	5	<input type="checkbox"/>
Quality of construction is durable and has a warranty	1	2	3	4	5	<input type="checkbox"/>
Impact on the look and feel of your home	1	2	3	4	5	<input type="checkbox"/>

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Q9. If you were shopping for a newly-constructed home for a primary residence, how likely is it that you would consider purchasing the types of home displayed in each of the following photo groups from the previous pages? (Please circle one number in each row.)

Housing Option	Never				Definite	Do not know
Photo Group 1	1	2	3	4	5	<input type="checkbox"/>
Photo Group 2	1	2	3	4	5	<input type="checkbox"/>
Photo Group 3	1	2	3	4	5	<input type="checkbox"/>
Photo Group 4	1	2	3	4	5	<input type="checkbox"/>

Q10. If you were shopping for a newly-constructed home for a primary residence, which of the following would you consider to be reliable resources for information? (Please select all that apply)

- Local home builder _____
- Consumer research groups such as Consumer Union _____
- Government studies _____
- Home manufacturer _____
- Friends or family _____
- Current panelized or modular home owners _____
- Realtor _____
- Popular press _____
- Home appraiser _____
- Other _____
- Do not know _____

Q11. When you are making a large home-related purchase, how often do you do each of the following?

	Never				Always	Do not know
Search the Internet for information about the product	1	2	3	4	5	<input type="checkbox"/>
Read magazines or other material about the product	1	2	3	4	5	<input type="checkbox"/>
Visit stores to comparison shop	1	2	3	4	5	<input type="checkbox"/>
Contact manufacturers for information about the product	1	2	3	4	5	<input type="checkbox"/>
Talk to other owners of the product	1	2	3	4	5	<input type="checkbox"/>
Watch home-product-related television shows	1	2	3	4	5	<input type="checkbox"/>

Q12. Please evaluate how well each statement describes the way you go about purchasing technical products. (Please circle one number in each row.)

Purchasing Approach¹⁹	Not At All				Very Well	Do not know
When I hear about new products, I am eager to learn more about them	1	2	3	4	5	<input type="checkbox"/>
I learn to operate new products before I can afford buy them	1	2	3	4	5	<input type="checkbox"/>
I enjoy discovering new products and activities	1	2	3	4	5	<input type="checkbox"/>
I use the computer to find general information	1	2	3	4	5	<input type="checkbox"/>
I often surf the internet for fun	1	2	3	4	5	<input type="checkbox"/>
I buy new technical products before my friends do	1	2	3	4	5	<input type="checkbox"/>
Name brands do not matter to me when buying new technical products	1	2	3	4	5	<input type="checkbox"/>
Other _____	1	2	3	4	5	<input type="checkbox"/>

Q13. In **what types** of homes have you lived? (Please check all lived in)

Site-built _____
 Manufactured _____
 Modular _____
 Panelized _____

Q14. In **which state** did you reside for the longest period of time during the past year?

_____ State

Q15. Did you **rent or own** your residence during the past year?

Rent _____
 Own _____
 Neither _____
 Do not know _____

¹⁹ Note that this scale was adapted from: Hartman, Jonathan B.; Gehrt, Kenneth C.; Watchravesringkan, Kittichai. Journal of Targeting, Measurement & Analysis for Marketing, Jun2004, 12(4): 353-365.

Q16. Which of the following **age groups** best describes yours? (Please check one)

- 21-30 years of age _____
- 31-40 years of age _____
- 41-50 years of age _____
- 51-60 years of age _____
- 61 years of age or greater _____
- Refused to say _____

Q17. Which of the following best describes your **education level**? (Please check one)

- High school graduate or less _____
- Some college _____
- College graduate _____
- Professional or graduate degree _____
- Other _____
- Refused _____

Q18. Including yourself, how many **people live** in your household? (Please check one)

- 1 _____
- 2 _____
- 3-4 _____
- 5-6 _____
- 7 or more _____
- Refused _____

Q19. What is your gender?

- Female _____
- Male _____
- Refused _____

Q20. Do you consider yourself Hispanic, Latino, or Spanish?

- Yes _____
- No _____
- Refused _____

Q21. Which of the following best describes your race?

- White _____
- African American or Black _____
- Native American _____
- Asian American _____
- Some other race _____
- Refused _____

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Q22. Which of the following categories best describes your 2005 household income before taxes? (Please check one).

- Less than \$20,000 _____
- \$20,000-\$40,000 _____
- \$40,001-\$60,000 _____
- \$60,001-\$80,000 _____
- Greater than \$80,000 _____
- Refused _____

Telephone Survey

Hello, my name is _____ and I am contacting you to ask your thoughts on housing. We're conducting a study to collect information for America's homebuilders and governmental agencies that will help to increase the number of homes that are affordable to average families.

I'd like to speak with someone who between the ages of 21 and 70 and who participates in your family's decisions about housing. Is that you?

1. Yes, person will answer survey
2. Person requested at home, will call to phone
3. Person requested not at home: CALLBACK
4. Will not answer now, person requested wants a Callback
5. Person REFUSES to answer
- SELECT IF NO VALID CONTACT-----
8. BUSY, NO ANSWER, ANSWERING MACHINE, LANGUAGE PROBLEM
9. BUSINESS, GOVERNMENT, DISCONNECT, ETC

[If new person, repeat]: Hello, my name is _____ and I work for the University of Baltimore, a statistical survey group based in Maryland. The University of Baltimore has been hired by HUD's Partnership for Advancing Technology in Housing, or PATH, to conduct a study on consumer perceptions of factory-built construction. The goal of the study is to measure average perceptions of different kinds of home construction based on the ways in which they are named. PATH will use this information to better disseminate its research on factory-built construction. As part of the study, we are contacting homeowners like you to understand how you perceive different kinds of home construction. The survey will take about 20 minutes. Participating in the survey is voluntary, and you can refuse to answer any question and you are not required to answer in order to obtain any benefit. The information we obtain from this survey will be presented only as statistical summaries. No individual respondents will be identified in our reports or the data we provide to HUD. You cannot be identified in any way. This survey is being conducted under OMB approval #2528-0240. Your opinions on housing are important to this study, and we hope you agree to participate.

Shall we begin?

1. Yes, begin
2. No, not now.... call back
3. No, refusal

1.) Do you participate in your household's decisions about housing?

1. Yes
2. No

[AGE SCREENING]

Are you between the ages of 21 and 70?

1. Yes
2. No [EXIT FROM SURVEY]

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2.) How familiar are you with the following types of homes? Please use a 1 to 5 scale where 1 equals "not familiar at all" and 5 equals "very familiar." Your answers may be 1, 2, 3, 4, or 5 depending on your degree of familiarity.

2a.) Site-built or stick built:

1. Not familiar at all
- 2.
- 3.
- 4.
5. Very Familiar
6. Don't know, can't say

2b.) Manufactured:

1. Very Unfamiliar
- 2.
- 3.
- 4.
5. Very Familiar
6. Don't know, can't say

2c.) Modular:

1. Very Unfamiliar
- 2.
- 3.
- 4.
5. Very Familiar
6. Don't know, can't say

2d.) Panelized:

1. Very Unfamiliar
- 2.
- 3.
- 4.
5. Very Familiar
6. Don't know, can't say

Thanks, I'm going to read some short descriptions to better familiarize you with the four types of homes.

Site-built homes, often referred to as "stick-built," are constructed entirely on location. They represent the majority of home construction in the country.

Manufactured homes often are built almost completely in a factory and transported to the home site. These used to be known as mobile homes.

Modular homes are built in a factory with two or more modules that are joined together at a home site

Panelized homes are built with factory-made walls that are joined together at the home site.

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3.) I'm going to read you some statements about the four different type of home construction I just described -- site-built, manufactured, modular, and penalized. Please tell me for which housing type each statement is true.

Each statement can be true for more than one kind of house. If you don't know please feel free to tell me that as well.

[READ EACH STATEMENT. PROMPT ONLY IF NECESSARY
CAREFULLY MARK EACH TYPE THE PERSON BELIEVES THE STATEMENT IS
TRUE.]

[STATEMENTS]

- Built to near-full completion in a factory
- Materials and components are transported to the home site in stacks
- Built on a steel frame with wheels
- Can readily be moved to another site after initial placement
- Often comes in two modules that are joined together at the home site
- Usually built or set on a permanent foundation
- Largely constructed at the home site
- Often purchased directly from a home builder
- Often purchased from a retail sales center separate from the builder
- Typically financed with a mortgage

[TYPES]

1. Site-built
2. Manufactured
3. Modular
4. Panelized
5. Do not know
6. EXIT FROM THIS QUESTION

4.) If you were to consider the purchase of a newly-constructed home, how important would the following factors be? Please use a 1 to 5 scale where 1 = "not important at all" and 5 = "very important."

[READ EACH ITEM REPEAT SCALE AS NECESSARY]

- Resale value
- Overall value...the most for the money
- Purchase price
- Quality of the neighborhood or surrounding area
- Can be quickly constructed
- Ability to choose design features
- Quality construction
- The look and feel of the finished home

5.) Now I'd like you to rate each of the house types on the same factors. For each item please rate it on a scale from 1 to 5 where 1 = "poor" and 5 = "excellent."

How would you rate each house with regard to:

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	Stick-built	Panelized	Modular	Manufactured
Resale value	1-5	1-5	1-5	1-5
Overall value...the most for the money	1-5	1-5	1-5	1-5
Purchase price	1-5	1-5	1-5	1-5
Quality of the neighborhood or surrounding area	1-5	1-5	1-5	1-5
Can be quickly constructed	1-5	1-5	1-5	1-5
Ability to choose design features	1-5	1-5	1-5	1-5
Quality construction	1-5	1-5	1-5	1-5
The look and feel of the finished home	1-5	1-5	1-5	1-5
a traditional site built home with regard to:	1-5	1-5	1-5	1-5

[IF PERSON SAYS "IT DEPENDS" OR SIMILAR REPEAT INSTRUCTION]

We realize that there is a wide range of site built houses.
Please try to keep the average or "typical" site built home in mind.

[INTERVIEWER: ONLY REPEAT STEM A COUPLE OF TIMES OR AS NECESSARY. REPEAT SCALE AS NEEDED.]

6.) If you were shopping for a newly-constructed home for a primary residence, how likely is it that you would consider purchasing the following types of homes? For each use a 1 to 5 scale where 1 = "you would never consider it" to 5 = "you would definitely consider it."

- Site-built
- Manufactured
- Modular
- Panelized

1. Never would consider it
- 2.
- 3.
- 4.
5. Would definitely consider it
6. Don't know, can't say

7.) If you were shopping for a newly constructed home for a primary residence, which of the following would you consider as reliable resources for information? [READ LIST: SELECT ALL MENTIONED AS RELIABLE]

1. Local Home-builder
2. Consumer research groups such as Consumer Union
3. Government studies
4. Home manufacturer
5. Friends or family
6. Current panelized or modular home owners
7. Realtor
8. Popular Press
9. Home appraiser
10. Don't know

8.) When you are making a large, home related purchase, how often do you do the each of the following? Please tell me if you always do it, often do it, sometimes do it, or never do it.

8a.) Search the internet for information about the product:

1. Always
2. Often
3. Sometimes
4. Never
5. Don't know, can't say

8b.) Read magazines or other material about the product:

1. Always
2. Often
3. Sometimes
4. Never
5. Don't know, can't say

8c.) Visit stores to comparison shop:

1. Always
2. Often
3. Sometimes
4. Never
5. Don't know, can't say

8d.) Contact manufacturers for information:

1. Always
2. Often
3. Sometimes
4. Never
5. Don't know, can't say

8e.) Talk to other owners of the product:

1. Always
2. Often
3. Sometimes
4. Never
5. Don't know, can't say

8f.) Watch home product related TV shows:

1. Always
2. Often
3. Sometimes
4. Never
5. Don't know, can't say

9.) I'm going to read some statements about the way people make decisions about buying new technical products. Please evaluate how well each statement describes the way you go about purchasing technical products. Please use a 1 to 5 scale where 1 = "does not describe you at all" and 5 = "describes you very well."

9a.) When I hear about new products, I am eager to learn more about them:

1. Does not describe me at all
- 2.
- 3.
- 4.
5. Describes me very well
6. Don't know, can't say

9b.) I learn to operate new products before I can afford buy them:

1. Does not describe me at all
- 2.
- 3.
- 4.
5. Describes me very well
6. Don't know, can't say

9c.) I enjoy discovering new products and activities:

1. Does not describe me at all
- 2.
- 3.
- 4.
5. Describes me very well

6. Don't know, can't say

9d.) I use the computer to find general information:

1. Does not describe me at all
- 2.
- 3.
- 4.
5. Describes me very well
6. Don't know, can't say

9e.) I often surf the internet for fun:

1. Does not describe me at all
- 2.
- 3.
- 4.
5. Describes me very well
6. Don't know, can't say

9f.) I buy new technical products before my friends do:

1. Does not describe me at all
- 2.
- 3.
- 4.
5. Describes me very well
6. Don't know, can't say

9g.) Name brands do not matter to me when buying new technical products:

1. Does not describe me at all
- 2.
- 3.
- 4.
5. Describes me very well
6. Don't know, can't say

10.) To your knowledge, what types of homes have you lived in? [CHECK ALL LIVED IN]

Site-Built
Manufactured
Panelized
Modular

11.) In which state did you reside for the longest period of time during the past year?

[ENTER STATE NAME OR ABBREVIATION]

12.) Did you rent or own your residence during the past year?

1. Rented

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2. Owned
3. Neither
4. Don't Know

13.) Which age group best describes yours?

1. 21-30
2. 31-40
3. 41-50
4. 51-60
5. Over 60
6. Refused to Say

14.) Which of the following best describes your education level?

1. High School Graduate or Less
2. Some College
3. College Graduate
4. Professional or Graduate Degree
5. Refused

15.) Including yourself, how many people live in your household? [DO NOT READ: MARK BEST RESPONSE]

1. 1
2. 2
3. 3-4
4. 5-6
5. 6 or Over
6. Refused

16.) Respondent is: [DO NOT ASK UNLESS UNSURE]

1. Female
2. Male

17.) Which of the following best describes your race?

1. White
2. African American or Black
3. Native American
4. Asian American
5. Hispanic, Latino, Spanish, or
6. Some Other Race _____
7. Refuse

18.) Which of the following categories best describes your 2005 household income before taxes?

1. Less than \$20,000
2. \$20,000 to \$40,000
3. \$40,001 to \$60,000
4. \$60,001 to \$80,000

5. Over \$80,000
6. Refused

That completes the survey. Thank you very much for your time.
Your answers will be very valuable...

Appendix C: Survey Sampling International's SurveySpot Panel Summary of Panel Management Practices

Recruitment

What we do

- Panelists are recruited through thousands of Web sites. We work with Web sites directly, as well as with data aggregators.

Why we do it

- This methodology minimizes bias and ensures consistency of panel composition over time. A panel which relies on a handful of major sources risks swings in the proportion of new members, which will result in inconsistent samples and unreliable universe availability.

Join Process

What we do

- Panelists must adhere to the following:
 - Have clearly and actively indicated their intention to join SurveySpot
 - Are 18 years of age or older.
 - Have received a welcome message with the opportunity to opt out.
 - Must not be a duplicate of another panelist.
 - Join data (geography, demographics), is validated and geographic assignment is confirmed.
 - A Rewards account is set up for each panelist upon successful joining and activation by panelist.
 - Panelists are assigned a unique panelist ID which is their identifier and can be used for deduping, recontacts and for analysis post-survey if needed.

Why we do it

- Consistency of the join process puts all panelists on the same playing field with a clear understanding of what they're signing up for. They will not be surprised by the survey process and will maintain a positive impression of survey research in general. High quality input results in high quality respondents.

Loyalty Program

What we do

- Panelists receive a welcome message, explaining what to expect from their membership
- Within the first week of membership they receive a quick, easy survey about their lifestyle, to demonstrate the survey process to them and give them a positive introduction to the experience.
- Within the first month, panelists receive several more screening surveys, where we ask them about their shopping habits, ailments, vehicles, etc. This allows us to target them more efficiently,

expose them to fewer invitations, and provide a more positive experience by minimizing screenouts and contacting them about surveys which match their interests.

- If panelists have not responded during the first month, they receive a friendly reminder that we miss them.
- After 3 months, they receive another similar message, and again after 6 months.
- If after 6 months, they have not responded to a survey, they are removed from the panel.

Why we do it

- Panelists who feel a sense of community are intrinsically motivated panelists, who are less likely to be responding with bias to any survey. Research shows that panelists who receive communications with survey results and other interesting information are more likely to respond. More responsive panelists means fewer invitations.

Proactive Communications Plan

What we do

- SurveySpot receives over 50,000 e-mails per month from panelists. Each is acknowledged immediately in real time, and followed up with a specific response. The panel communication team has a goal of responding to all incoming e-mail within 24 hours.
- When a panelist message indicates a problem with the survey experience, the problem is researched and communicated to the client immediately.
- A quarterly newsletter reinforces membership in SurveySpot and highlights the benefits of survey research and the importance of the respondent role in the process.
- If there are errors (programming errors on surveys), apology messages and “thanks for your patience” messages are sent.

Why we do it

- When panelists get a prompt response they gain a sense of trust with SurveySpot.
- When an “actual human” responds to a panelist question or concern with a personal message, it ties the panelists closer to us, and makes that panelist more likely to stay with us when we need them to complete an especially long or difficult survey.
- When we show interest in the comments our panelists make, they come to believe that “your opinion counts” is more than just a slogan.

Research on Research Program

What we do

- We send a monthly survey to gauge panelist satisfaction. Among the issues covered are the preferred frequencies of contact and reward programs.
- We work with several clients to research panel performance and quality issues and to test alternatives in a real research environment. Among the topics we’ve examined are various incentive tactics and strategies, and the effects of response frequency on survey responses. The latter formed a paper which was presented at the recent ESOMAR panel conference in Budapest and will be presented at an MRA meeting next month.

Why we do it

- Listening to our panelists gives us insights into what makes panelists responsive. For example, some panelists respond primarily to have a chance to win or earn some money, some because they want to be heard, others because surveys are fun. This allows us to tailor our panelist offering to create more enthusiastic and responsive panelists.

- Knowing how panelists behave in the real survey environment allows us to consult effectively with our clients on such topics as day of week effect, panel longevity effect, frequency of response effect and a host of other issues.

Regular Panelist Profiling and Respondent Data Identification

What we do

- Panelists receive a sequence of panelist profiling surveys to gather their shopping habits, auto ownership, ailments, lifestyles, hobbies and interests. Response rates from these subgroups are as high as 60 percent.

Why we do it

- Targeting means fewer invitations; fewer invitations means higher response rates and faster completion for client projects.

Incentives Program

What we do

- The key approach to rewards is flexibility – offering the reward that best suits the panelist and the research objective. Nearly \$3.8 million was awarded during 2005.
- Among the rewards options offered:
 - Monthly \$10,000 prize pool which awards multiple cash prizes every month.
 - Special seasonal promotions to stimulate interest, for example we'll pay for your home heating in winter, or gas for summer traveling, etc.
 - Amazon rewards and per-respondent incentives are used for longer surveys to recognize respondent burden and the value of respondents' time.
 - A charity donation option will be available this summer. We have partnered with Save the Children and will be announcing a series of cross-promotions and initiatives.
- A reward account is established when the panelist joins and is activated by the panelist, and provides a way to check on rewards received and claim all rewards.

Why we do it

- Consistent with our philosophy that “panelists are people” and need to be approached as individuals with customized communications, our suite of rewards offerings is designed to strike a response-chord with different types of panelist.

Panel Hygiene Rules and Practices

What we do

- Significant churn is a positive feature of the panel, ensuring a strong flow of new panelists and prompt removal of “deadwood” non-responders.

The following panelist records are either not permitted to join the panel, or removed promptly:

- Undeliverable e-mail addresses:
Addresses detected as undeliverable result in a bounceback message directed to surveyspot@surveyspot.com. There are many different variations of possible failure codes – temporary and/or permanent. We match against 24 different rules using “regular expression” matching. The rules have been selected experientially and conservatively represent the clearest and most common delivery failure codes. Most of the codes are in the 55x range and

- specific delivery failure wording is checked. Bounceback processing to extract undeliverable addresses is executed twice per hour and addresses are deactivated within 24 hours of detection. Bounceback processing for feedback loops for aol.com and domains managed by United Online are processed every 2 hours and 6 hours respectively. (These are not true bouncebacks but requests to be removed from the panel.) These requests are processed within 24 hours of identification.
- **Mailbox Full:**
Email invitations resulting in a delivery failure due to a “mailbox full” condition are tracked over the course of six weeks. This allows panelists whose mailboxes have become full because of extended vacations, etc. to retain their membership. We use common word patterns for identification. These panelists are re-contacted four times and will be deactivated if each re-contact attempt determines that the mailbox continues to be full. It is assumed that a mailbox that is full for such a long duration is abandoned. ISPs maintain their own specific rules for account removal for email addresses whose mailboxes remain full for long periods.
 - **Syntactically Undeliverable:**
We collect syntactically undeliverable e-mail addresses on a weekly basis. These are handed off to the autodeactivate process for automatic removal.
 - **Welcome message**
New panel recruits are sent a welcome message. Addresses proving to be undeliverable are culled from our SMTP logs and submitted for deactivation.
 - Panelists who have been a member for 6 months but have not responded.
 - In order to maximize representation of the more reticent, less active panelists on our panel, we mail inactive panelists several times during their lifetime with SurveySpot to remind them that their opinions are missed and attempt to retain them.
 - Duplicate panelists, using e-mail address matching.
 - More than one panelist per household, using e-mail address matching.
 - Panelists who have completed a survey in an unreasonably short time period.
 - Panelists whose survey data appears suspect (as reported by our clients and after investigation).
 - Panelists whose survey data appears suspect (as seen in our own screener surveys).
 - Panelist demographic and geographic details are available as URL parameters which can be used as verification for questions asked during the survey.
 - A suite of deduping options is available: by start, by complete, by invitation, by screenout, as well as custom dedupe options.
 - White listing is maintained with all the major ISPs. An independent test of SurveySpot invitation deliverability showed outstanding deliverability rates in the mid-high 90 percent range. This is a key metric of a healthy panel. If invitations are being turned away by ISPs, the sample will be biased and ineffective.

Why we do it

- Because after 30 years we can't get out of the habit of providing quality samples!

Limitation of Invitation Frequency

What we do

- Invitation volume is not limited directly, but is limited via indirect measures. We believe that the risks of biasing the sample as a result of direct limits on invitations outweigh the benefits. A filter that excludes panelists after they have received x number of surveys a week or a month can result in significant and unpredictable geographic, demographic, or other biases or "holes" if sample happens to be pulled immediately after a large study with targeted selects. Research conducted with two leading research clients indicated small and controllable differences between responses from active responders and inactive responders (white paper available on request.) We have a busy panel, and the average number of invitations received a week is 3 or 4, some desirable panel segments do get more invitations than that. Indirect controls on the number of invitations sent include:
 - Screening the panel on 1200+ hobbies, interests and lifestyle selects so we can address low incidence projects with fewer invitations
 - Working with clients to get projects into the field quickly so they can stay in the field longer. We recommend 5 to 7 days in the field for all projects to maximize the response rate
 - Creating, varying and improving member benefits to maintain motivation
- We do place limits on the number of completed interviews that panelists take. We rest any panelist who has taken more than two surveys a week in the previous two months. A fraction of a percentage of the panel is affected by this, but resting this ultra-hyperactive group reduces the risk that anyone responding to your survey has just taken a survey for a competitive product last week, although at the same time preserving the consistency of sample characteristics across time which is so important.

Why we do it

- Sample consistency can be affected by controls on invitation volume. Response rates cannot be viewed in isolation, but rather as part of the overall panel management plan.

Duplicate Records and Fraud

What we do

- The data quality team reviews all panelist data (join data and screener survey data) looking for inconsistent data patterns. If the inconsistency looks like a mistake, we'll correct, or remove the data. If it looks like fraud, the panelist is removed.
- Usually duplicate memberships are the result of confusion when joining or setting up a rewards account. In these cases, we contact the panelist, find out which e-mail address they want to use and clean up the duplicate record.
- Data analysis is performed regularly. For example, pulling all panelists from one ZIP code and examining the list by hand for evidence of duplication or false information. The combination of programmatic controls and human examination of the data by hand is the same combination we've been using on our telephone databases for nearly 30 years. SSI Vice President Linda Piekarski supervises panel data quality for the SurveySpot panel.

- If a client reports inappropriate behavior from a panelist we investigate and remove the panelist if necessary.
- Newsletters and panel communications educate and spread the word about the importance of honesty and good faith in survey responses.
- The reward team checks the list of panelists claiming rewards for any evidence of fraud, in the form of duplicate membership, etc. Because SurveySpot uses a variety of rewards rather than paying for every survey taken, there is little incentive to join the panel multiple times with aliases.
- The panel is automatically part of the same Survey Sampling geographic and demographic updating as our telephone samples.

Why we do it

- Experience has shown us that a combination of programs, procedures and examination of the data by hand produces the cleanest and most accurate data.

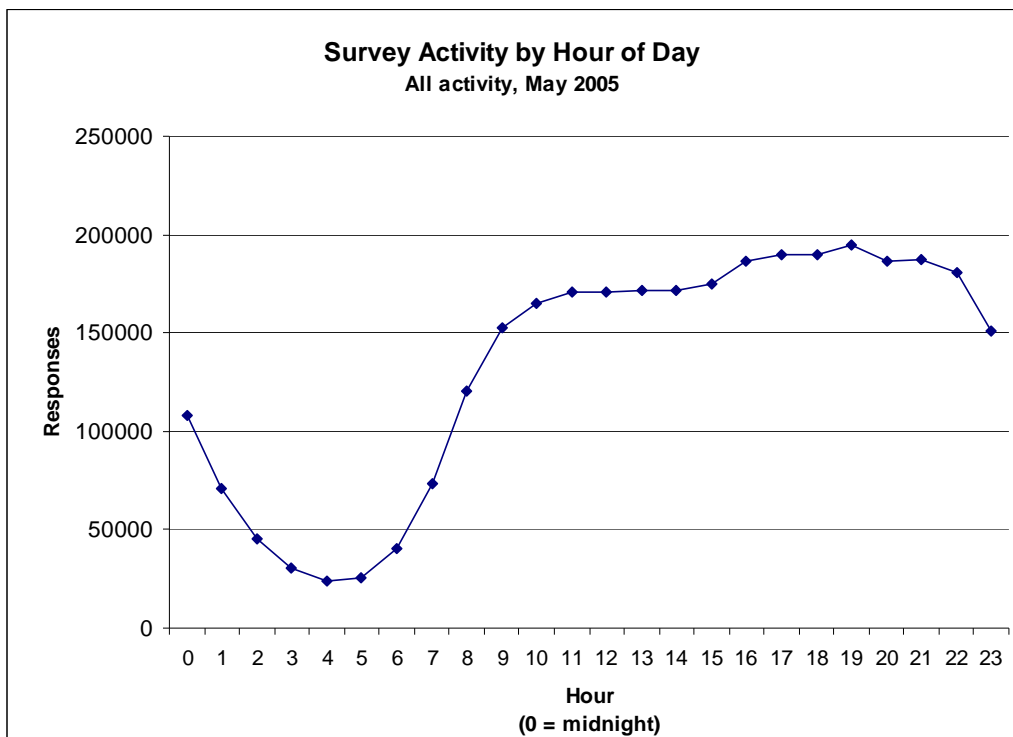
Privacy of information

What we do

- The SurveySpot panel is compliant with:
 - Spam regulations
 - Safe Harbor for Europe
 - Market research industry association standards
 - A Member of the Better Business Bureau Online
 - COPPA legislation

Panel Analysis

A team of analysts works to analyze panel behavior so we can better advise clients on response patterns. For example:



What is the primary reason you joined SurveySpot?

To influence decisions and designs of products and services: 26 %

I like to share my opinions with others: 25 %

Opportunity to make some money while giving my opinion: 39 %

Other reason: 5 %

Not sure: 4 %

How often would you like to take a survey?