

CLEANING AND HOUSEHOLD MAINTENANCE HABITS OF INDIVIDUALS
OF LOW TO LOWER-MIDDLE SOCIO-ECONOMIC STATUS AND THEIR
PERCEPTION OF, EXPOSURE TO, AND WILLINGNESS TO TRY GREEN
CLEANING AND GREEN HOUSEHOLD MAINTENANCE TECHNIQUES

A Thesis

Presented to the Faculty of the Graduate School

of Cornell University

in Partial Fulfillment of the Requirements for the Degree of

Master of Science

by

Jessica Carol Mooney

January 2011

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ABSTRACT

The cleaning and household maintenance habits of individuals of low to lower-middle socio-economic status and their perception of, exposure to, and willingness to try green cleaning and green household maintenance techniques is an important consideration. The idea of 'going green' is one that is often reserved for individuals of middle to high socio-economic status. While using green cleaning products and switching to household maintenance practices to those that are better for the environment may at first pose a financial strain, the personal and environmental health benefits derived from such changes in behavior are invaluable. This research focused on forming an understanding of where there are common mistakes and misconceptions related to safe household cleaning and maintenance techniques- particularly in relationship to indoor air quality. The occupants of a variety of buildings in the five boroughs of New York City (variety in terms of style of building and age of the building) were surveyed. They were asked to complete a thorough demographic profile and to answer a number of questions regarding their cleaning and household maintenance habits. A self-administered questionnaire was used as the survey instrument.

Regression analyses were used to identify and examine relationships between demographic characteristics and perceptions of, exposure to, and willingness to try green cleaning and green household maintenance techniques.

The findings indicate that household cleaning and maintenance habits differ significantly in terms of gender and age. Female respondents to this survey are more likely to try green cleaning products. The older individuals surveyed were less likely than the younger individuals to consider making their own cleaning products. Differences due to household income were not observed.

The results indicate that gender is the only significant independent variable in terms of willingness to try a green cleaning product. The women surveyed in this study are more likely than the men to try a green cleaning product that they know would be as effective as a cleaning product with which they are already familiar. Additionally, the results suggest that older individuals who were surveyed are less likely to consider making their own cleaning products as substitutes for the cleaning products they already use.

BIOGRAPHICAL SKETCH

Jessica Mooney attended Cornell University for her undergraduate study and earned a Bachelor of Science degree in May 2008 in Design and Environmental Analysis from the College of Human Ecology. Her concentration was Facility Planning and Management. She continued her studies as a graduate student in Design and Environmental Analysis in the field of Human-Environment Relations. Following the completion of her Master's degree from Cornell University, she plans on earning an MBA and pursuing a career in real estate development and consulting.

This thesis is dedicated to my parents and my sister.

You have instilled in me a love of learning, and you have taught me everything I know about patience and kindness. Thank you.

ACKNOWLEDGEMENTS

I wish to express my greatest appreciation to my committee chairperson, Joseph Laquatra, whose unwavering patience, guidance, and support allowed me to move forward at my own pace throughout this process. I could not have asked for a more understanding advisor. Thank you to Jack Elliott for acting as my minor committee member.

Thank you to Karen Booker, Betty Wilson, and Barbara Schechter in the Housing Education Services Department at the New York City Department of Housing Preservation and Development. You provided me with an invaluable learning experience during my internship. I am amazed at the quality resources you provide for New Yorkers. Thank you also for your assistance in data collection. Without your help, I would not have had such interesting data to analyze.

Thank you to the College of Human Ecology for providing me with a grant, which provided significant financial support to help move my research forward.

Thank you to my friends at home on Long Island and in New York City for understanding why I needed an extra year in school before I could begin my post-college life. Your genuine interest in and support of my research made this journey a sweet one. Finally, a very special thank you to Anne Oswald and Vanessa del Aguila for being there throughout this entire adventure. You two have been a constant source of support and humor, and for that I am ever so grateful.

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CHAPTER I

INTRODUCTION

This thesis examines the cleaning and household maintenance habits of individuals of low to lower-middle socio-economic status, their perception of cleanliness inside their home, their exposure to green cleaning, and their willingness to try green cleaning products and techniques. Examining these habits and perceptions is in an effort to form an understanding of where there are common mistakes and misconceptions related to safe household cleaning and maintenance techniques and indoor air quality.

Research Objectives

In response to the need for a deeper understanding of the household cleaning and maintenance habits of individuals of low to lower-middle socio-economic status, the objectives of this research project are:

1. Examine the household cleaning and maintenance habits of individuals of low to lower-middle economic status and note differences based on their demographic characteristics.
2. Examine the perceptions of, level of exposure to, and experience with green cleaning techniques of individuals of low to lower-middle socio-economic status.

Definitions of Terms

The following terms are defined for a clearer understanding of their use in this research project:

Sustainability (as defined by the United States Environmental Protection Agency, which uses the Brundtland definition): Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Green cleaning: Although definitions of green cleaning vary, for the purposes of this study, green cleaning is defined as household maintenance practices that minimize the use of chemical cleaners and rely on those with natural ingredients, and the use of methods that follow lead-safe household maintenance practices.

Lead-safe household maintenance practices: Cleaning and maintenance techniques that acknowledge the danger of lead exposure on the health of the individuals who are carrying out the cleaning and maintenance, as well as the individuals who inhabit the space. These techniques will seek to minimize lead exposure.

Research Hypotheses

The following alternative research hypotheses are defined for this study based on the preceding research questions:

Hypothesis H1: Household cleaning and maintenance habits will differ based on the demographic characteristics of the surveyed individuals.

Hypothesis H2: Perceptions of green cleaning will differ based on the demographic characteristics of the surveyed individuals.

Hypothesis H3: Exposure to green cleaning will differ based on the demographic characteristics of the surveyed individuals.

Hypothesis H4: Willingness to try green cleaning will differ based on the demographic characteristics of the surveyed individuals.

Research Justification

A significant portion of research on green cleaning focuses on the health and financial benefits related to green cleaning, as well as the importance of green cleaning in maintaining a healthy building. A more important consideration is the negative downstream impacts of cleaning products on living ecosystems in local watersheds. However, green cleaning can pose a sharp change in cleaning habits for individuals, and it is only their understanding of and willingness to try green cleaning that will ensure its success and proliferation. In addition, green cleaning is often presented as a concept and practice that is only achievable for individuals of middle to higher socio-economic status. Consideration of current cleaning and household maintenance habits of individuals in low to lower-middle socio-economic status, as well as an understanding of their perceptions of effectiveness green cleaning will provide a broader perspective to this topic. The purpose of this research is to form an understanding of the current household cleaning and maintenance habits of individuals of low to lower-middle socio-economic status and to provide suggestions for designing a green cleaning education program aimed at this segment of the population.

Scope of Study

This thesis examines cleaning and household maintenance habits of individuals of low to lower-middle socio-economic status, their perceptions of cleanliness inside their home, their exposure to green cleaning, and their willingness to try green

cleaning products and techniques. Chapter II reviews the relevant literature in this area. It concentrates of literature in the last ten years. Chapter III gives a detailed description of the research methodology and analytical framework. Chapter IV presents the findings from the data analyses and gives an interpretation of these results. Chapter V concludes the thesis and discusses the significant findings, the limitations of the research design, suggestions for future study, and practical implication for building managers and housing education experts.

Chapter II

Literature Review

The environment is often perceived as an infinite resource- a “commons”- that is the responsibility of the government, of corporations- of anyone other than the individual- to care for and protect. Many of the activities that make up a modern lifestyle have a negative impact upon the environment. Specifically, traditional cleaning products and techniques can have a negative impact on living ecosystems. Green cleaning is one aspect of environmental responsibility that individuals have the power to learn and implement in their own homes. Green cleaning is simultaneously congruent with environmental and personal health. It is one way to ensure that the home is not causing the individual or the environment undue harm – especially since the EPA estimates that Americans spend up to 90% of their time indoors (Deneen and Howard, 2007). As Glegg and Richards state, “the personal benefits of acting to protect the environment are intangible to most individuals,” (2007, p.898). Green cleaning, however, is tangible. It puts control of personal and environmental health in the hands of everyday people. While any form of cleaning can improve the environment of the home in terms of perceived cleanliness and comfort, green cleaning specifically respects the health of the individuals inside the home and seeks to maintain or improve the health of the home environment. Since green cleaning begins with respect for the environment inside the home, by extension, the same thought behind such practices can then be applied to the greater environment, outside the home. Kurz (2002) suggests the environmental issues can often be attributed to individuals making choices to act in a manner that benefits them personally, while negatively impacting others. Kurz (2002) also points out that an individual who has always used a resource that he or she considers abundant, without regard for the fact

that it is finite, is not likely to change that behavior. Green cleaning provides an opportunity for individuals to begin considering the condition of their immediate environment-the environment inside their home-and to start making adjustments in their cleaning and maintenance habits that better respect their health and the environment. For example, an individual who begins to use fluorescent light bulbs in their home will not only begin to see that such a change is relatively easy, but also cost and time-effective. In addition, these light bulbs outlast the life of traditional incandescent bulbs, which in turns makes for less waste- and lessens the individual's impact on the greater environment. In this regard, green cleaning and maintenance can act as a powerful learning tool. Once individuals understand the importance of caring for their immediate living environment, they can extend those principles beyond the home.

The focus of this thesis is green cleaning in low-income households. Central to the success of green cleaning is the idea that the lifestyles of individuals can either diminish or strengthen the sustainability of their home (Priemus, 2003). That is, green cleaning has the potential to help individuals lessen the negative impact their actions inside the home have on the environment. The United States Environmental Protection Agency uses the Brundtland definition of sustainability: "Meeting the needs of the present without compromising the ability of future generations to meet their own needs," (August 24, 2009) *US Environmental Protection Agency/What is sustainability?* Retrieved October 17, 2009. Buildings that are built to 'be green' may fail to live up to their potential not only because the building inhabitants- those for whom the building was built- do not have the insight, training, or resources to carry out the environmentally friendly attributes that were incorporated into their home, but also because the building specifications and attributes don't accurately consider their

lifestyles. Cole (2003) points out that unfortunately, even buildings that were designed with green performance standards may not perform optimally because building occupants lack the appropriate knowledge and understanding to fully account for such standards (from Buys, Bailey, and Barnett, 2003). As such, homes often fail to support a lifestyle that adequately responds to the intentions and efforts of those who designed the building (Hertz, 1996). That is, if a building is designed and built with sustainability in mind- the building occupants are in part responsible for upholding those sustainability principles. Otherwise, the ideas upon which the building was conceived will be lost. Priemus (2003) explains this as the gap between building construction and building use; "...sustainability measures that are incorporated into a building are often there with the underlying assumption that tenants intend to modify their behavior in order to take advantage of them, as their [sustainability measures] success is dependent upon 'the user's willingness to adopt new attitudes and practices,'" (Priemus, 2003, p.15). Green cleaning is one such sustainability measure that involves user behavior modification and can help to close that gap between building construction and building use.

The effort and thought behind green building is enhanced by green cleaning and maintenance practices. If a building has been constructed using reclaimed and repurposed materials- the use of green cleaning and maintenance inside the building will only serve to further the thought and commitment to the environment brought forth by the building process. Relevant literature points out that keeping initial purchase prices as low as possible can pose another obstacle in both the conventional and affordable housing market. Farr (2006) points out that a major issue in the affordable housing industry is the focus on just getting people into homes and not considering the true cost of living in them. This is indicative of the importance of

breaking down the true cost of building green and the addressing the importance of occupant education so that the cost of living is also affordable. This is often illustrated with a life-cycle cost analysis. Farr (2006) explains that in order to fully understand the affordability of green building practices, a life-cycle analysis should incorporate both upfront costs and long-term expenses to demonstrate affordability over a period of time. In addition, current literature emphasizes the benefit of starting the building process with sustainability in mind, rather than working it in as an afterthought. It is more cost-effective to incorporate green building practices from the very start of the design process, rather than sprinkling them in afterwards (Farr, 2006). Similarly, considerations for green cleaning should be incorporated early on. O'Brien (2007) suggests that cleaning practices and products are incorporated into the design process, as they will affect the operations of the building over time. However, this concept leads to the problem of already existing buildings- housing that is older, occupied, and not beyond disrepair. In short, buildings that are relevant- even if they are not sustainable. While green building practices are often focused mainly on new construction, there are relevant solutions for developers, builders, and managers to incorporate environmentally friendly measures into their already-existing buildings (Seven Steps to Cleaning Green, 2008). As the article 'Seven Steps to Cleaning Green' points out, "one of the most productive methods for going green is to adopt an eco-friendly cleaning program for your building," (2008, p. 1). Doing so can offer solutions to real problems, and help to improve the triple bottom line (MacDonald, 2008). This was a central concept in my research, which was conducted with individuals in lower-income households that may or may not live in sustainably-designed buildings.

Building occupants – the end-users of buildings – can benefit greatly from such salient information regarding their own actions in the home. It is beneficial to provide building occupants with daily reminders of the cost and environmental impact of their behavior, as providing feedback on household resource consumption is related to the extent to which individuals continue to engage in environmentally sound behaviors in their home (Priemus, 2003). As relevant literature points out, individuals are motivated by the resulting financial gain of their actions. “The fundamental principle underlying rational-economic models of ESB [environmentally sustainable behavior] is that people’s propensity to engage in such behavior is primarily determined by whether or not it is in their financial interests to do so...to change behaviors using this model, one needs to alter the pricing structure of both resources and devices that can aid conservation of resources in a way that renders the act of conserving resources more economically beneficial to individuals than not conserving. Within a strict rational-economic framework, these changes in economic parameters ought to be sufficient to bring about the desired behavioral change (e.g., energy conservation),” (Kurz, 2002, p. 259). In short, behavior change can be brought about if individuals fully understand how such changes are to their benefit and if they believe that the benefits warrant their own behavior modification. However, it is difficult to address every aspect of why individuals engage in environmentally sustainable behavior. “...the main shortcoming of a rational-economic approach to ESBs (even one that involves the inclusion of concepts of persuasive communication) is that it fails to appreciate the psychological and social meaning of “price” or “cost” and the meaning of and relationship with the goods and services that individuals spend their money on,’ (Kurz, 2002, pp. 264-265). For example, “of those respondents who already had a solar heater installed on their roof, many claimed that saving money was a major reason for having made this decision. Somewhat paradoxically, for those who

did not have a solar heater, many cited the heater's cost as the main reason for not investing in a solar heater. It is understandable that an investment with a 10-year payback period may be difficult for many to afford or justify. Thus, it would seem that cost would be better conceptualized in psychological analyses of ESB as being a concept that can influence behavior through the individual's *representations* of cost, as opposed to being a concrete, independent variable that can be measured in dollars," (Kurz, 2002, p. 263). Simply put, people interpret the facts and figures in different ways.

Similarly, the basic living and maintenance habits of the building occupants should reflect the values of sustainability, whether or not they were 'built' into the structure of the building. For example, it is important to provide ongoing feedback to the users of a property with regard to their consumption of gas, electricity, and water. At the crux of these efforts is education for both builders and occupants. Whether the buildings themselves are 'sustainable' or not, such feedback can provide important lessons. This feedback can also prove lucrative to the building occupants, and as Laquatra explains, "To put a value on savings in utility bills over the lifetime of a house requires any of several calculations, such as lifecycle cost analysis, net present value, or cost-benefit analysis," (2003, p. 30). Such calculations influence builders who are looking to build green; "using a life-cycle approach, green affordable housing is more cost effective in net present value (NPV) terms than conventional affordable housing," (New Ecology, n.d.). As Laquatra states, "knowing precisely how the value of energy efficiency affects the value of a home would give builders a clear incentive to invest in levels of energy efficiency beyond that which is specified by building codes," (2003, p. 30). Once the financial benefits are understood, green building

practices may become the industry standard, which will broaden the base for green cleaning initiatives.

Seligman (1986) found that one of the best predictors of household energy conservation was the extent to which a resident regarded thermal comfort as being central to his or her conceptualizations of health and well-being (from Kurz, 2002, p. 264). As Kurz (2002, p.264) points out, "...psychological variables such as these would seem to be important influences on the price elasticity of demand for resources such as energy.' That is, the more an individual equates thermal comfort with health and well-being, the more flexible they will be in terms of the cost of heating their home. They will be more willing to pay for winter heating and summer cooling to ensure that their personal thermal comfort level is achieved. These economic and psychological concepts can also be applied to willingness of an individual to implement green cleaning in their home.

The aim of green cleaning is not only to save money and environmental resources, but also to improve the health of building occupants. Green cleaning techniques tend to take into account the harmful effects of lead exposure- whereas traditional cleaning techniques don't necessarily do so. In terms of housing and health, "...given the complexity of the built environment, understanding its influence on human health requires a community-based, multi-level, interdisciplinary research approach," (Srinivasan, Fallon, and Dearry, 2003, p. 1446). Similarly, previous research indicates that individuals in public housing- who tend to be at the lower end of the SES spectrum and largely of minority background- may be exposed to many housing factors that influence their health and well-being (Brugge *et al.*, 2003). With respect to lower-income housing, "... socio-economic status (SES) is correlated with both housing equality and mental health. It may relate also to housing tenure (e.g.

owning versus renting) and neighborhood quality. Substandard housing occurs more often in low-income neighborhoods,” (Evans, Wells, and Moch, 2003, p. 480). Additionally, the prevalence of asthma and other respiratory ailments in residents of low-income housing is associated with the quality of their indoor living environment. There are a number of established risk factors in the home including moisture, mold growth, pest infestation, high dust levels, improper heating, inadequate ventilation and exposure to secondhand cigarette smoke. All of these are associated with lower SES and in turn, deteriorating housing conditions (Brugge et al., 2003). Housing is an important area of study and will continue to be of interest as environmental, economic, and public health issues collide. Khosla points out that “the creation of affordable, safe, and green housing for low-income, disabled, under- and unemployed immigrant and racialized communities in major cities could be a key lever in spurring sustainable economic growth,” (p. 7). Housing is not only important for those within it, but also for those around it. When individuals are proud of where they live, they are likely to take of their home and their surroundings (Sullivan, 2007).

A “social-dilemma” is described in relevant research as a situation in which “private interests are at odds with collective interests,” (Liebrand, Messick & Wilke, 1992 from Kurz, 2002, p. 260). The manner in which individuals regard and relate to their environment can be considered a social dilemma because it is a common resource that relies upon the shared decisions of those using it, “...with these individual decisions always being located in the context of others’ decisions and perceptions and expectations of others’ decisions,” (Foddy, Smithson, Schneider & Hogg, 1999 from Kurz, 2002, p. 260). Kurz (2002) points out that a key issue in promoting ESB is changing the attitudes that influence ESB in order to mobilize the individual to make more responsible decisions.

There is, however, a difference between how an individual chooses to behave outside the home (consumption behavior) and inside the home (habitual behavior). As relevant literature points out, habitual behaviors are those that likely entail little, if any, actual decision making. These behaviors might include turning the lights on and off, and flushing the toilet (Barr, Gilg, and Ford, 2004). Adjustments to habitual behavior, such as lowering heat, closing windows, and varying room use will reduce energy use and “require either no or minimal structural adjustment,” (Barr, Gilg, and Ford, 2004, p. 1426). These types of habitual actions are reflected in consumption feedback provided to building occupants in the form of utility bills, measuring devices in the home, etc. Consumption behavior change entails adjusting “purchase-related behaviors” (Van Raaij and Verhallen, 1983 from Barr, Gilg, and Ford, 2004, p. 1426). These behaviors require some decision making, and changing them will involve some significant adjustments- as oftentimes both financial and technical resources will be necessary (Barr, Gilg, and Ford, 2004). Environmentally sustainable behavior both encompasses green cleaning and green maintenance practices- as green cleaning and green maintenance practices involves both the purchase of environmentally friendly cleaners (consumption behavior) and the related behavior changes in the home (habitual behavior). Relevant research presents an explanation of the manner in which social and environmental values influence and encourage ‘environmentalist’ behavior. Barr, Gilg, and Ford (2004) point out that an individual’s perception of the natural world will likely fall into one of two categories- “biospheric” (valuing nature intrinsically) or “anthropocentric” (conceiving of nature as for human benefit). Green cleaning is relevant in both cases, as it is both a means of improving personal health (anthropocentric orientation) and behaving in an environmentally friendly manner (biospheric orientation).

As mentioned earlier, the environment is often regarded as an unlimited resource with little or no tangible value. This belief is embodied our consumption habits. As Kurz (2002) states "...the consumption behavior of individuals in many western societies, such as the U.S or Australia, is rarely actually influenced by the threat of resource depletion, even in times of drought and energy shortages. The main reason such events are rare is that the relevant authorities and governments that manage such resources are primarily motivated by a desire to avoid a situation where a resource is depleted to such an extent that individual consumers suffer," (Kurz, 2002, p. 266). Thus, we never have a full understanding of our impact upon the environment and we continue living and consuming without regard for our actions. "This form of 'consumer protection' environmental management masks consumers from the real consequences of their consumption, hence allowing consumers to continue consuming at their current levels without experiencing shortage. The price of this blissful ignorance is paid by the environment itself, which continues to be abused at unsustainable levels. In the case of greenhouse gases, carbon dioxide emissions continue to rise and the effects of global warming follow," (Lurz, 2002, p. 266). Interestingly, environmental issues tend to represent a threat to personal health, which, as mentioned earlier, is related to cleaning, green or otherwise.

Demand appraisal is defined as "an individual's monitoring of events with regards to his or her well-being (Lazarus, 1991)," (from Homburt and Stolberg, 2006, p.2). "Personal well-being can be threatened if a situation is appraised as impairing or threatening personal goals, health, or identity (ego involvement). A range of studies has demonstrated that environmental problems are frequently appraised as threatening or damaging to personal well-being and especially to personal health (Dunlap, Gallup, & Gallup, 1993; Kuckartz & Grunenber, 2003; Lai, Brennan, Chan, & Tao, 2003),"

(from Homburg and Stolberg, 2006, p. 2). Demand appraisal is addressed in relevant literature as a key predictor of pro-environmental behavior. Individuals who feel personally connected to the environment will act accordingly. “Our basic tenet is that demand appraisal in the context of environmental stressors (personal health harm and health threat) and resource appraisal (general belief in the ability to cope with environmental problems) are correlated determinants of pro-environmental behavior,” (Homburg and Stolberg, 2006, p. 3). “Demand appraisal is followed by the second distal determinant of pro-environmental behavior: resource appraisal. Resource appraisal concerns coping options—that is, whether any action could prevent harm, ameliorate it, or produce additional harm or benefit (Lazarus, 1991). We propose that resource appraisal, especially self-efficacy (Bandura, 1997), motivates problem-focused coping,” (Homburg and Stolberg, 2006, p. 2). This can be extended to green cleaning, as it is a way to prevent environmental and personal harm inside the home. For example, individuals who are concerned about the quality of the air they breathe can decide to take precautions to help raise the indoor air quality of their home.

When conducting research and trying to gather information on the environmental perceptions of individuals, it is evident that using a survey, as Olli, Grenstad, and Wolleback (2001) point out, will often fail to build the social context within which attitudes and behavior patterns are formed. This issue relates to the concept of demand appraisal because it is difficult to accurately access the “social context within which individuals are environmentally concerned and behave in an environmentally friendly way. The problem of social context is addressed by developing a measure of social networks that include participation, volunteering, and face-to-face contact with friends in environmental organizations,” (Olli, Grendstad, and Wolleback, 2001, p. 181). In addition, “...external factors might be neglected.

Because of a number of environmentally friendly activities are performed for rather different reasons within different contexts (Hallin, 1995; Martensson & Petterson, 1997), low ABCs [attitude-behavior correspondence] may stem from a failure to account for social contexts and potentially influencing factors external to the relationship under study,” (Olli, Grendstad, and Wolleback, 2001, p. 182). When personal behavior towards the environment is in question, individuals will screen their responses- closing the gap between public virtues and private vices, (Olli, Grendstad, and Wolleback, 2001, p.187). So we may see that individuals are not fully disclosing their actions towards the environment as they actually occur. Another complicating factor is convenience. An individual may simple be taking advantage of a service provided by an institution- thus the institution may be held more accountable for the action than the individual. “...Recycling is easier if curbsided and institutionalized than if repositories are remotely located (Steel, 1996),” (Olli, Grendstad, and Wolleback, 2001, p. 188).

Another issue related to gathering data regarding individual actions toward the environment is that there is often a perceived ‘right’ answer. If a survey is used, participants will often respond with the way they think they ought to act, rather than how they actually act (Glegg and Richards, 2007). As relevant literature points out, individuals make decisions based on their social value orientation. “...Schwartz has argued that there are two fundamental dimensions to social value orientations, the first being terminal: ‘self-enhancement – self- transcendence’, representing what Cameron *et al.* (1998) have termed ‘pro-self’ and ‘pro-social’ values, respectively. ‘Pro-self’ is related to self-interest; ‘pro-social’ is related to communal interest. ‘The ways in which environmental behaviors are measured (i.e. actual, reported, or intended) have consequences for empirical research. Because it is easier to report environmentally

friendly behavior than to practice it, and because it is tempting to retrospectively oversell the commendable, more people will report practicing environmental behavior than actually do so (Schulz & Oskamp, 1996),” (Olli, Grendstad, and Wolleback, 2001, p. 188). “As a result, it appears questionable how many people are ever really weighing up personal benefit versus the collective good when they engage in everyday behaviors such as driving to work, taking a long, hot shower, or air conditioning their home. Most people may not even perceive everyday objects around their home or their transport choices as having an important environmental impact,” (Kurz, 2002, p. 267). “Hormuth (1999) points out that when we are engaged in using (or, for that matter, buying) most of the things around us that are environmentally relevant (e.g. cars, showers, etc.), we do not usually perceive them in terms of their environmental impact. Rather, we tend to perceive them in terms of their primary, instrumental functions, such as transportation or personal hygiene,” (Kurz, 2002, p. 271). Cleaning is one such activity.

Affordances are the potential uses and capabilities of an object that are recognized by the individual. Affordances answer the questions, “What can I do with this object?” Or “What does this object allow me to do... what does it afford?” (Kurz, 2002, p. 270). It is necessary to ‘attune’ individuals to the ‘environmental-impact’ affordances of objects they use in their home and to provide them with the necessary information to use these objects successfully (Kurz, 2002). Similarly, environmental education that includes green cleaning will provide individuals with a set of techniques that they can use every day, allowing them to use products and cleaning ingredients safely and more effectively.

Affordances are not physical, tangible attributes of objects. They cannot be picked up or held. Instead, they are “sensitive perceptions experienced by

observations”. An example presented in the literature, “...you cannot touch or visually see the affordances of energy consumption when you turn on a light, but you may perceive it or not, as the case may be,” (Kurz, 2002, p. 270). Similarly, the affordances of green cleaning aren’t tangible, but individuals can feel confident that they live in a safe and healthy environment. Once an individual understands the affordances of an object, they must then make a decision as to whether or not they will “maintain or modify” their behavior based on the consequences that the use of the object affords (Kurz, 2002).

Attunement is the second concept that is related to the fact that there are, as Kurz points out, primarily more than one affordance that an individual may perceive in an object or in their environment. Individuals can be aware of (or ‘attuned to’) different types of affordances. The example in the literature addresses an individual’s attunement to the affordances of an automobile: one individual may be attuned to the fact that an automobile affords transportation, while someone else may be attuned to the fact that an automobile affords the consumption of money or gas (Kurz, 2002). This will depend upon the consequences of the individual’s behavior; “...participants are explicitly attuned to the collective-consequence affordances of their individual behavior. This can be contrasted with individuals who are consuming resources in their everyday lives and not necessarily attuned to these affordances,” (Kurz, 2002, p. 273). Similarly, individuals may primarily be attuned to the antiseptic or germ-killing properties of household cleaners; as such, they may not be attuned to the risks of using strong chemicals in their homes.

Kurz (2002) explains the third key concept as “effectiveness”. This refers to the skills and knowledge that an individual utilize an object’s affordances once the affordances have been perceived. This is where a green cleaning education process is

involved. Individuals may understand the importance of green cleaning- the benefits they will experience- but the paramount component of changing user-behavior to reflect environmental responsibility is the implementation of these changes.

As stated by Hormuth, “the central tenet of this approach is that attempts to understand and change ESB have to take into account the psychological relationship between individuals and their physical and social environments. ESB can be seen as the result of the way that we interact with things around us in our everyday lives,” (from Kurz, 2002, p. 270). “Examples of environmentally relevant things include such objects as washing machines, rubbish, air-conditioners, cars, or, more specifically perhaps, a gas pump. In such an approach, the important unit of analysis becomes the interaction (in both a physical and a psychological sense) between the individual and the relevant thing with which they engage to cause an environmental impact,” (Kurz, 2002, p. 270). In short, if permanent behavioral changes are to take place, the set of affordances that individuals perceive must be effective for the long term.

Considering this statement from Burgess *et al.*, “an individual cannot be expected to take responsibility for uncertain environmental risks in a captured market. It is asking too much of the consumer to adopt a green lifestyle unless there is a social context which gives greener consumerism greater meaning,” (from Seyfang, 2005, p. 303) it seems reasonable that green cleaning is an appropriate starting point for an individual who is interested in improving environmental behavior. There are a number of reasons to try green cleaning, one of which is the idea of purchasing power and the influence of consumer decisions to making a statement about environmental beliefs. As Seyfang points out, “citizenship is a hot topic for consumers,” (2005, p. 290). The manner in which consumers spend their money can act as a direct reflection on their environmental attitudes. “Shopping and consumption behaviour are

increasingly seen as a public arena of activism and the expression of citizenship, and environmentalists are encouraged to put their money where their mouth is and ‘do their bit’ by buying ‘green’ or ‘ethical’ goods- also known as sustainable consumption...” (Seyfang, 2005, p. 290).

Consumers looking to ‘go green’ may do so with a number of intentions. “Patterns of material consumption exercised through the marketplace embody multi-layered meanings above simple provisioning, for example, aspirational consumption, retail therapy, self-expression, a need for belongingness, self-esteem, self-validation, a political statement, an ethical choice, status display, loyalty to social groups, identity, and so forth,” (Burgess *et al.*, 2003; Jackson, 2004b from Seyfang, 2005, p. 297). The motivation behind consumer choices may not be congruent with the goal as an “ecological citizen” to be a sustainable consumer. In fact, such motivations may directly counter such goals. However, individuals who are looking to buy green cleaning products may want to not only make a statement about their concern for the environment- but also their commitment to their own health and well-being inside their home. As Seyfang points out “... sustainable consumption is clearly identified as a tool for practicing ecological citizenship- requiring individuals to make political and environmental choices in their private consumption decisions,” (2005, p. 292). These private consumption decisions have the power to actually change the marketplace, whereby the consumption of ‘acceptable’ goods begins to drive progression; “...sustainable consumption is implicitly defined as the consumption of more effectively produced goods, and the ‘green’ and ‘ethical’ consumer is the driving force of market transformation, incorporating both social and environmental concerns when making purchasing decisions. This policy relies upon ‘sustainable consumers’ to

demand sustainably produced goods and exercise consumer choice to send market signals...” (Seyfang, 2005, p. 294).

However, buying green may not be that easy. There are a number of barriers that ‘ecological citizens’ may face in the marketplace. These barriers may range from a lack of information about the environmental and social consequences of their consumption decisions- to a lack of credibility and consistency of product information. As Holdsworth suggests, government intervention may seek to fix these issues with a variety of public awareness campaigns and product label/specification requirements (from Seyfang, 2005, p. 295). However, even information that is made available to consumers isn’t necessarily understandable. As Glegg and Richards (2007) point out, consumers may not have the background to understand the difference between products that appear to be green, and products that actually are green.

Retailers are also considered sources of consumer information. They are often considered more credible than product companies or advertisements, and are consequently in a position of responsibility to provide the consumer with accurate information (Glegg and Richards, 2007). Predictably, it is often the manner in which retailers choose to stock their stores that influences consumer decisions. Relevant literature indicates that individuals seeking out environmentally friendly products are often disappointed with what retailers have made available to them; it is often difficult to find green products on store shelves. This presents a merchandising issue. As Glegg and Richards (2007) point out, ‘the green-product sector is characterized by small-scale, mostly independent producers who have difficulty competing with the large multinational companies who dominate the market.’

Similarly, consumers often behave in a manner that is congruent with forces beyond their control. As Sanne and Bibbings state, “...a person might choose one

brand of washing-machine over another because of its greater energy-efficiency, but what they (*sic*) cannot easily choose is to purchase collectively and share common laundry facilities among a group of residents. Consumers are effectively locked in to particular consumption patterns by the overarching social structures of market, business, working patterns, urban planning and development,” (from Seyfang, 2005, p. 297). Hence, while ecological citizens do their best to use their consumption decisions to inform the marketplace, there are societal barriers and factors beyond their control that have already been established. Additionally, one may argue that the sheer act of buying and consuming is at odds with any ‘green’ component of the product itself. In addition, relevant literature points out a major criticism of using sustainable consumption as a means to transform the marketplace: purchases act as the only votes and voices that count. As Holdsworth and Bibbings point out, “individuals may not be able to act on their ecological citizenship preferences for a variety of reasons, and therefore are unable to influence the market. These barriers include the affordability, availability, and convenience of sustainable products, as well as feelings of powerlessness generated by the thought that individual action will not make any difference, disenchantment with corporate green marketing and preference for products that are not available, such as an efficient, clean, and safe public transport system,” (from Seyfang, 2005, p. 296).

The question remains as to whether or not consumers are willing to make changes in their buying habits. “... it is clear that in addition to the regulation, there is a potential to effect change through retailer and consumer attitudes and behaviours. Interviews were conducted with 7 key stakeholder groups to identify critical issues, which were then explored using a public survey questionnaire (1,008 respondents) and 8 subsequent focus groups. The findings demonstrated that the issue of chemicals in

products is of concern to consumers for reasons of personal health rather than environmental protection. Key obstacles to the wider purchase of “green-alternative” products included perceived high cost and poor performance, lack of availability of products, and poor information concerning such products,” (Glegg and Richards, 2007, p. 889). This presents a challenge for green cleaning. Is it the health risk or the environmental risk that leads people to try green cleaning? Does it matter- as long as they are using green cleaning practices?

Here is where retailers can encourage green cleaning. Relevant literature points out that a regulatory ‘push’ in product changes—if not in alignment with the consumer ‘pull’ for product changes—will not work in affecting the product composition of the marketplace. However, if consumer-demand patterns indicate that there needs to be a change in product quality and availability (which would result from consumer education and empowerment), significant changes could result (Glegg and Richards, 2007). As the article ‘Innovation: General Merchandise’ states, “while effectiveness is still paramount in determining consumers’ buying choices, the demand for environmentally sustainable products has skyrocketed, and suppliers have responded. Much of the product innovation in the industry today, in fact, is geared to producing “green” cleaning products that work as effectively as traditional cleaners.” But new products won’t necessarily change consumer behavior. Consumer buying habits are often well-established and ingrained. People tend to buy the same brands repeatedly because they recognize them, they know that they work, and they don’t see a good enough reason to change. This is where education plays a significant role. Consumers need to be given the chance to change their consumption patterns in a manner that is tailored to their tastes and beliefs. One retailer highlighted the difficulty of persuading people to start purchasing low-impact products or to change

their purchasing habits at all: “If it’s cheaper, people wonder why: if it’s more expensive, people cannot afford to buy it... you must educate them about what they are buying,” (Glegg and Richards, 2007, p. 894). As such, cost is not the only motivating factor when it comes to cleaning supply purchases. Brand loyalty (or even just brand familiarity) affects consumer behavior. There is a fair amount of trust placed in brands, and cleaning products are no exception (Glegg and Richards, 2007).

As the literature points out, product loyalty is an important factor in addressing consumer behavior change. Individuals may have grown up using specific cleaning products, only to end up using those same products as an adult- whether or not they actually considered the effectiveness of the product. While price and performance are certainly important issues in consumer behavior, the act of switching to a new and unfamiliar product may entail a variety of other factors (Glegg and Richards, 2007). As stated in relevant literature, “...recognising the name of a chemical and understanding its basic properties does not enable an understanding of its impact on the wider environment. It has long been recognized that data, such as a chemical’s toxicity or persistence from tests carried out in single-species, single-chemical laboratory tests, provide little information about the likely impacts of that chemical in a particular formulation and use it in a certain way (Santillo *et al.* 1998). The expectation that individuals could interpret the significance of that information and compare it with other factors in the decision-making process, such as price and performance, is unrealistic,” (Glegg and Richards, 2007, p.900). This brings forth the idea that consumers not only need to understand the products they are using, they also need to understand the effects of their use.

As Light (2009) points out, Pasteur’s “germ theory of disease,” which has been used since the 19th century, encourages thorough cleaning practices that may not be in

total alignment with green cleaning. Green cleaning often involves a shift in cleaning philosophy. The primary goal of green cleaning is to first consider personal and environmental health, and physical appearance second. Relevant research points out that proper cleaning and maintenance of a building directly impacts the health of the building occupants. “No matter how sustainable the architecture or captivating the interior design, a building quickly becomes unwelcoming without proper cleaning to mitigate surface and air contaminants such as dust, mold, bacteria, viruses, and a host of other organic and inorganic pollutants. Poor indoor air quality (IAQ) can have a serious negative impact on people who regularly occupy affected spaces. More than 20 million Americans today are afflicted with asthma, a chronic respiratory disease often associated with poor indoor air quality,” (Seitz and Kijek, 2008, p. 77). It is notable, however, that automobile exhaust also contributes to poor air quality and thus the health problems associated with it. As such, it is evident that green cleaning can have a tremendous impact on the ‘health’ of a building and the health of individual homes within that building. As the literature points out, green cleaning is a component of the “triple bottom line (economic, social, and environmental),” (Ashkin, 2008 p. 34). A decision to implement green cleaning practices in a household or in the maintenance routine of a building is not strictly an environmentally-based choice. In fact, a decision to not implement green cleaning may undermine the conscious design choices made in the development and construction of the building (O’Brien, 2007). The operations and maintenance of a building are paramount to maintaining a healthy indoor environment. Developing and implementing an appropriate plan for green cleaning will support the operation and maintenance of a healthy building. It is recommended that building managers access their property holistically (just as an individual in his or her home may look at their entire cleaning routine) to identify where problems exist- where the current cleaning process is not working to the full

advantage of the building occupants, and the building itself (Seven Steps to Cleaning Green, 2008). Outline the short and long terms goals of a green cleaning program. A review of relevant literature points out that “the goal of a green cleaning curriculum is to educate on (1) obtaining chemicals, (2) using chemicals at home, (3) safe chemical storage, (4) proper disposal of home chemicals, (5) green clean experiments, (6) an understanding of the chemistry behind green products. Activities using non-harmful products can be implemented all along the curriculum. It is up to the educator to decide which concepts to teach at each level given their complexity and maturity and skill of the student,” (Gonzalez, 2009, p. 15).

It is also important to consider timing. An existing building will already have a cleaning routine in place. Since green cleaning may come along much later than initial construction, careful steps should be taken when changing already-existing cleaning habits and routines. As the literature explains, it is imperative that this be taken into careful consideration. “Implementing a green cleaning program requires thoughtful preparation and evaluation and always must be viewed as an ongoing process. Cleaning experts suggest the following steps when transitioning to a green cleaning program: Form a Team, Benchmark, Categorize Facility Areas, Determine Green Evaluation Criteria, Select Products, Develop a Pilot Plan, Execute the Program, Evaluate the Program, Expand Evaluate & Enjoy,” (Sawchuk, 2009, pp. 43-45). This model can be modified and adjusted to meet the needs of the building managers, maintenance staff, and building occupants. In some cases, it might prove beneficial to standardize cleaning practices so that each task is broken down significantly- perhaps using a flowchart to visually depict the task. This will help to train the individual and form new cleaning habits, as necessary. As such, successful incorporation of a green

cleaning program requires continual training programs and progress monitoring (Sawchuk, 2009).

There are multiple layers of change management that need to take place when it comes to implementing a green cleaning program. A green cleaning program should not only address the cleaning process, but also the products and tools incorporated into the cleaning process. Relevant literature urges building administrators to carefully consider the products used in their buildings. In order to fully promote a healthy indoor environment, it is necessary to understand the impact of products during their use, as well as their disposal (O'Brien, 2007). As such, it is imperative to instruct users of green cleaning products on their proper use, as the environmental damage of a product often occurs during its use. However, Sauer *et al.* point out that "... there is evidence that the user behavior can be influenced by design measures on the user-product interface to minimize non-ecological use," (from Oberender *et al.*, 2001, p. 71). This suggests that the *use* of green cleaning products can actually impact the products themselves if there is a feedback loop between the product users/consumers and the product developers and designers. This feedback can then inform the design process, which is critical for determining the environmental impact of the product. In addition to the design process, Sauer *et al.*, and Wenzel *et al.* point out that "...the primary contributor to a consumer product's environmental impact is the usage phase, mainly due to energy consumption during product usage," (from Oberender *et al.*, 2001, p. 71). "Other phases of the product life cycle (such as manufacturing and recycling) have a considerably smaller environmental impact," (Oberender *et al.*, 2001, p. 71). However, product disposal is a significant concern, as Glegg and Richards (2007) point out that the synthetic chemicals present in many cleaning products are

simply poured down the drain after their use, without regard for or understanding of the impending consequences.

Once consumer behavior is understood, product developers can better address the user-product interface (Oberender *et al.*, 2001). Proper product use is imperative, as it relates directly to the effectiveness and most importantly product safety. If there is a disparity between the intention of the product developers, and the product users, then it is likely that the environmental advantages of the product will be lost upon its use. "...The main aim of design for environment is to support ecologically optimal behavior and to minimize erroneous behavior through optimal user-product interfaces," (Oberender *et al.*, 2001, p. 71). As mentioned before, consumers should be supplied with relevant information if they are to be expected to try new cleaning products; "...the integration of the environmental aspects during product development increases the need for information related to that product and its life phases," (Oberender *et al.*, 2001, p. 72). This is in relation to green cleaning products on the market because new users should not only know how to use them properly, but there should also be an educational component. Green cleaning products that are not used properly can lose some their intended effectiveness rather quickly. "The consequence of this erroneous behavior is usually an increase in energy consumption. Mainly human-related causes are ignorance, not recognizing the consequences, unmotivated, or overwhelmed users," (Oberender *et al.*, 2001, p. 73). This can negate the intentions of the product developers and designers. "The reasons for ecologically erroneous behavior can be divided between a lack of knowledge about the usage process, habitual, unconscious behavior, and conscious wrong behavior. Effects of such false usage are usually serious ecological damages, e.g., increase electricity consumption," (Oberender *et al.*, 2001, p. 72). The line of defense in this situation is a clearly labeled

product and—as mentioned previously—a well-implemented and simple education program.

Product labels are effectively the last chance for consumers to gain understanding of the intended use of a product, and for product designers and developers to express information that is pertinent to the user. This is especially important for unfamiliar products. “Product labels provide guidance related to limitations, potential impacts, and precautionary measures,” (U.S. EPA Region IX, 1999 from Light, 2009, p. 24). Labels are essentially a source of consumer education. It is possible that a product user will only know what he or she can understand from a label. As relevant research states, “potential occupant health effects depend not only on product toxicity but also on volatility, timing of application (e.g. occupied vs. after-hours), ventilation, half-life (e.g. quickly dissipates vs. long-lasting), the presence of susceptible individuals, and application procedures. Occupant impacts can generally be avoided by following label requirements, treating areas while unoccupied, and providing adequate ventilation,” (Light, 2009, p. 25). This may avoid human exposure but it does not limit biospherical exposure. The solution to pollution is NOT dilution. Product labels are also relied upon to relay information regarding the efficacy and purpose of the cleaning product. It is important that consumers understand which cleaning products are effective for completing which tasks (Lehman, 2003).

Industry standards, such as Green Seal, can help consumers understand cleaning products more accurately. Products that are certified by Green Seal make certain claims, such as minimization of personal health impacts and the reduction of environmental impacts. These include the following: reduced emission of harmful volatile organic compounds (VOCs), reduction of worker injury, lowered toxicity to aquatic organisms, and improved biodegradability,’ (Green Seal, 2006; Light, 2009).

‘Criteria for approval are based on soil removal, toxicity of the undiluted product, combustibility, VOC content, aquatic toxicity, biodegradability, and packaging (Green Seal, 2006). Antimicrobial properties are not considered, and there is legitimate concern regarding the antimicrobial efficacy of green cleaning products (GSPs) (Light, 2009). Some GCP labels specify that they include naturally-derived products such as citrus oils, while others do not list active ingredients’ (Light, 2009, p.25). In addition, Green Seal is not a perfect rating system. ‘Relatively low toxicity ratings for GCPs may be misleading, since routine precautions and realistic use scenarios are not considered. For example, Green Seal certification is related to ingestion of the undiluted product. Potential dermal and eye irritation is highlighted without consideration of required avoidance measures (e.g. gloves and eye protection)’ (Light, 2009, p. 25).

Method is a company that develops attractive, non-toxic green cleaning products. It was founded by an environmental scientist and an advertising executive. Tom Fishburne, head of communications at Method, explains the company’s philosophy: “We try to develop everything we do from things that are sourced ethically, thinking about products as having a past, a present, and a future. But we don’t want to get preachy about the environment. We are at this tipping point right now where people want to do the right thing but a lot of ‘dark green’ eco brands are preachy and make you feel guilty.” (Case Study-Ecover; Squeaky Clean, 2008, p. 22).

Ecover is another company that makes green cleaning products and promotes a greener lifestyle. By simplifying ‘being green’ into understandable snippets of information that don’t overwhelm consumers, Ecover has made green cleaning more commonplace and less specialized. As literature points out, ‘...if the green ideas supporting the brands are no longer on the fringes, neither are the consumers likely to

buy its products. They are average people who want to make ‘positive’ choices.’ (Case Study-Ecover; Squeaky Clean, 2008, p. 22). Lastly, Gonzalez points out that there are two central concepts for the consumer to consider: learning to buy what is needed, and considering if what is to be bought is actually necessary (Gonzalez, 2009, p.15).

Seventh Generation is yet another company that manufactures environmentally responsible cleaning products, and they are in fact considered the pioneer in this niche market. As the concept of green cleaning has gained popularity in the last few years, Seventh Generation has responded to increasing demand and market competition by redesigning its packaging (Wong, 2008). Seventh Generation products now appear fully updated and modernized – a change that will likely increase their appeal on store shelves and help them connect directly with a wider base of consumers (Hughes and Ebenkamp, 2007).

There is a notable need for research involving green cleaning in low-income households. As the literature explains, “...green cleaning has evolved beyond just a specific product or service, and is best thought of as a concept or thought process that focuses on creating a healthy, safe, and attractive building while minimizing harmful impacts. It encompasses many concepts such as continual improvement, stewardship and other issues beyond just those associated with cleaning, health, and the environment,” (Ashkin, 2008, p.34). With proper understanding and education, it is possible to enforce the concept of cleaning first for health, and secondly for appearance (Lehman, 2003). It is also essential to reinforce the idea that green cleaning and the health of the economy need not be linked—individuals do not need to wait for the economy to improve before they adopt green cleaning practices. Additionally, such measures will help to close the divide between those individuals

who currently have access to green cleaning products, and all of those who want access, but are still without (Shekar, 2008).

This literature indicates the relevance of examining the cleaning habits of residents of low-income housing in order to formulate an understanding of their perception of, exposure to, and willingness to try green cleaning. Establishing general guidelines for incorporating the most pertinent aspects of green cleaning will go beyond bringing green into the lives of these individuals— it has the potential to improve them.

CHAPTER III

METHODOLOGY

Overview

The cleaning and household maintenance habits of individuals, as well as their perception of and willingness to try environmentally friendly cleaning techniques may be related to their socio-economic status and current housing situation. For example, residents of a low-income housing development may not see environmentally friendly cleaning products in their local store, so they may not know where to find such products, or they may not know such products exist.

This research explores possible relationships between demographics and household cleaning techniques, and possible relationships between demographics and willingness to try environmentally friendly cleaning techniques. The primary data collection instrument is a survey that was written by the researcher and distributed by a third party of classroom instructors to participants taking courses at the New York City Department of Housing Preservation and Development (HPD) in the Housing Education Services (HES) Department. The survey was self-administered and voluntary. The primary focus of the survey is on variables pertaining to general household structure (number of residents, children, smokers, pets); basic household knowledge (existence of carbon monoxide detectors, humidity level); frequency of household task performance (taking out the trash, washing dishes, vacuuming, etc.); current household maintenance habits (types of cleaners used, amount of cleaner used); and perception of environmentally friendly cleaning and maintenance. The survey was approved by the Cornell University Institutional Review Board. Approval documents are shown in the Appendix.

Research Design

The research parameters examined focused on household cleaning and maintenance and perception of and willingness to try environmentally friendly cleaning techniques. The parameters were general household structure, basic household knowledge, frequency of household task performance, current household maintenance habits, perception of environmentally friendly cleaning and maintenance, willingness to try green cleaning products and techniques, and demographics.

The Research Site

The survey was administered by HPD instructors holding classes at 100 Gold Street, in New York, New York, and 210 Joralemon Street in Brooklyn, New York. The number of students varies in a class and ranges from 10 to 35. Some of the classes have equipment for hands-on training, such as plumbing, electrical, general repairs, etc. Other classes may have video equipment for interactive learning. For example, videoconferencing may be used to connect classrooms in different locations.

The Sample

The sample is composed of individuals who elected to take a course at HPD. Students sign up for courses online, in person, or by mail. Students in these classes speak English, and the classes where these surveys were distributed were taught in English and offered free of charge. Students may be building managers and superintendents, or they may be members of the general public who live in one of the five boroughs (Manhattan, Queens, Brooklyn, the Bronx, or Staten Island) and reside in low-income housing. Participants were not compensated for taking the survey.

The Survey

The self-administered survey was developed by the researcher and distributed by classroom instructors to course participants in the Housing Education Services (HES) Department in the New York City Department of Housing Preservation and Development (HPD). The components of the distributed surveys were identical. Please see the Appendix for a chart of the components of the survey. The following is a detailed discussion of variables in each section of the survey. The Housing Education Services Department offers a variety of training courses to building owners and managers, housing professionals, superintendants, and tenants. The Housing Education Program (HEP) within the Housing Education Services Department offers courses in building management and systems maintenance. HES is currently working to incorporate aspects of environmental sustainability into the curriculum.

The first portion of the survey, Background Information, consisted of 7 general demographic questions. This was intended to obtain basic background and demographic information on the participants. This information will be used in the data analysis to report patterns in terms of basic demographic characteristics. There were 2 free-response questions that asked when the participant's home was built and if a lead assessment had been performed on the home.

The next part of the survey, Part 1, consisted of 32 free-response questions (including the follow-up portions of 7 questions) that asked participants to give some information on their home and their thoughts on cleaning products. There was a chart to fill out that asked participants to indicate how often they performed 12 specific household maintenance tasks, such as taking out the trash or vacuuming. This chart was used in a previous Cornell research project (Maxwell, 2008). The data gathered

in Part 1 provide information on the cleaning and household maintenance habits of the participants and will aid in developing curriculum that corresponds to these habits.

The next section of the survey, Part 2, consisted of 11 statements that were answered using a Likert scale, with answers corresponding to numbers 1 through 5. The same Likert scale was used for each question. The statements were all related to the participants' thoughts regarding cleaning habits. The information gathered from this section will help demonstrate patterns between demographics and cleaning habits.

The next section of the survey, Part 3, consisted of 21 true or false statements. Each question was related to general household knowledge with some emphasis on lead- poisoning hazards in the home. Lead is a pertinent issue in household maintenance, especially in low-income housing. Cleaning techniques can impact the potential harmfulness of lead, so it was important to gather information related to lead in this survey.

The last section of the survey, Part 4, consisted of 2 free-response questions that asked participants to explain why they are taking a course at HPD and why they decided to answer the survey.

In addition, there was a survey introduction that gave 3 basic statements regarding the nature and intent of the survey. Participants were informed that the survey was intended for research purposes, that it was voluntary, and that their submitted information would remain anonymous. They were also informed that they could skip questions, give partial answers for questions, and stop answering questions at any time. Each section of the survey, with Background Information as the only exception, also had brief directions for the participants. A copy of the survey is shown in the Appendix.

A total of 120 surveys were distributed. 71 of the surveys were completed. The calculated response rate was 59.16%. The surveys were completed between January 2009 and March 2009.

There were six items on the survey that asked the respondent to give demographic information. These included: gender, age, highest level of education, annual household income, marital status, and race. This information was collected to compare the participants and indicate possible relationships between their demographic information and the remaining collected data.

The reasons for non-response may include: lack of interest; not enough time to complete; questions seemed too intrusive; language barriers; participants starting the survey and taking it home to finish it, and then not returning it; unwillingness to respond without knowing the 'right' answer; misunderstanding the survey instructions or intent. It might have been beneficial to ask questions with similar content in two different ways to ensure that the participants understood the question and answered truthfully. In addition, it is possible that participants who did not indicate their race were of a mixed background, and were not provided with an option to indicate this. Options such as 'N/A' should have been clarified to avoid confusion. Lastly, if participants felt uncomfortable with the demographic questions in the beginning of the survey, they might have been less inclined to thoroughly complete the remainder of the survey.

The results of the survey were entered into an SPSS worksheet to be analyzed. Once the results were entered into the SPSS worksheet, eight randomly selected surveys were reviewed to check for accuracy. Four of the 8 surveys were entered without any mistakes. Two of the 8 surveys had 2 mistakes that were then corrected. Two surveys had a single mistake that was then corrected. This random sampling was

sufficiently accurate, and data analysis began thereafter. The conclusions drawn from that analysis, along with a literature review of relevant articles, will then lead to recommendations for a course in environmentally friendly cleaning at HPD.

CHAPTER IV

RESULTS AND DISCUSSION

The following results are based on the analysis of 71 surveys returned from the participants at HPD. They are presented in four sections. Section I is an overview of the demographic characteristics of the sample, Section II describes the analyses for the second portion of the survey, Section III describes the analyses for the third portion of the survey, and Section IV describes the regression analyses performed.

Section I: Overview of the demographic characteristics of the sample

As of March 2009, 71 surveys had been returned; thus attaining a calculated response rate of 59.16%. A total of 120 surveys were distributed to the participants at HPD. In terms of the distribution of gender, there were 47 males and 21 females surveyed. Males make up 66.2% of the participants, whereas females comprise 29.6% of the participants. Three participants did not indicate their gender.

Participants were asked to indicate their age. The categories were as follows: '18-21'; '22-25'; '26-30'; '31-40'; '41-50'; '51-60'; and '61 and over'. The '41-50' age group has the highest number of participants- totaling 26 (36.6%). The second highest number of participants was in the '31-40' age group, with 19 (26.8%). The '18-21' age group had only one participant (1.4%). One participant did not indicate age. In terms of the distribution of gender across the age groups, the highest number of males is in the '41-50' age group- with a total of 15. Similarly, the highest number of females is in the '41-50' age group- with a total of 10. There were no female participants in the '18-21' and '22-25' age groups. There was at least one male participant in each of the age groups.

Participants were asked to indicate their highest level of education. The categories were as follows: 'Less than High School'; 'High School/GED'; 'Some College'; '2-Year Degree (Associates)'; '4-Year Degree (BA, BS)', 'Master's Degree'; 'Doctoral Degree'; and 'Professional Degree'. The categories 'Some College' and '4-Year Degree' were answered most frequently; there are 15 participants (21.1%) in each category. Only one participant indicated that they held a doctoral degree. Six participants did not indicate their highest level of education. When comparing highest level of education across gender, male participants answered 'High School/GED' and 'Some College' most frequently, with 10 male participants in each category. The 1 participant holding a doctoral degree was female. The highest number of female participants falls into the '4-year Degree' category, totaling 7. There are no female participants in the 'Less than High School' or 'Professional Degree' categories. In terms of highest level of education spread across age, there was 1 participant in the '22-25' age group that indicated a 4-year degree as their highest level of education. Another notable figure is that the 1 doctoral degree was from a participant in the '26-30' age group. The two professional degrees were earned by participants who were both in the '31-40' age group.

Participants were asked to indicate their annual household income. The categories were as follows: 'less than \$10,000'; '\$10,000-\$19,999'; '\$20,000-\$29,999'; '\$30,000-\$39,999'; '\$40,000-\$49,999'; '\$50,000-\$59,999'; '\$60,000-\$69,999'; '\$70,000-\$79,999'; '\$80,000-\$89,999'; '\$90,000-\$99,999'; '\$100,000-\$149,999'; and 'more than \$150,000'. The '\$20,000-\$29,999' category has the most participants, with a total of 12 (16.9%). The categories '\$90,000-\$99,999' and 'more than \$150,000' categories has the fewest participants, each totaling 2 (2.8%). The mean income was '\$40,000-\$49,000' and the median income was '\$30,000-\$39,999'. Ten

participants (14.1%) did not indicate their annual household income. When comparing annual household income and gender, most male participants, 11 in total, indicated that their annual household income is \$20,000-\$29,999. The highest number of female participants, 7 in total, indicated that their annual household income is \$10,000-\$19,999.

When comparing annual household income and age, the highest number of participants fell into the '41-50' age group with an annual household income of '\$20,000-29,999'. Notably, 4 participants in the '31-40' age range indicated that their annual household income fell in the '\$100,000-\$149,999' category. When comparing annual household income and highest level of education, participants were split across a number of categories. Four participants were the highest frequency in any category. Interestingly, 4 participants in the 'Less than High School' and 'High School/GED' categories fell into the '\$20,000-\$29,999' household annual income category, whereas the same number of participants from the 'Some College' category indicated that their annual household income fell in the '\$10,000-\$19,000' category.

Participants were asked to indicate their marital status. Out of 71 total participants, 68 participants provided a response, for a calculate response rate of 94.37%. There were six options for marital status: 'Single/Never married'; 'Married'; 'Co-Habiting'; 'Separated'; 'Divorced'; and 'Widowed'. 'Single/Never married' was the most frequently indicated answer, with a total of 30 participants (42.3%). 'Married' was the second most popular answer- with 23 (32.4%) participants. 'Co-Habiting' and 'Widowed' were the least popular answers- each with 2 (2.8%) participants.

When comparing marital status and gender, of the 43 male participants who indicated their marital status, 18 of them were married, which was followed by the

‘Single/Never married’ category, with 16 males. None of the male participants indicated they were co-habiting. Out of the 21 female participants who indicated their marital status, most were in the ‘Single/Never married’ category- for a total of 13. Only 3 female participants who indicated their marital status were in the ‘Married’ category. Whereas 3 male participants indicated that they were separated, none of the female participants fell into this category.

When comparing marital status and age, the ‘Single/Never married’ category had the most individuals fall into the ‘41-50’ age range, with a total of 13. Seven individuals in the ‘Single/Never married’ category fell into the ‘31-40’ age range. There were no participants in the ‘61 or over’ age range that indicated their marital status as ‘Single/Never married’. Of the 23 participants that indicated their marital status as ‘Married’, 11 fell into the ‘31-40’ age range, and 6 fell into the ‘41-50’ age range. None of the married participants fell into the ‘18-21’ or ‘22-25’ age ranges. Of the 2 participants that indicated their marital status as ‘Co-Habiting’, both of them indicated their age as ‘41-50’. Similarly, the 2 participants who indicated their marital status as ‘Separated’ fell into the ‘41-50’ age range. Of the 7 participants that indicated their marital status as ‘Divorced’, 4 of them fell into the ‘51-60’ age range, 2 of them fell into the ‘41-50’ age range, and 1 of them indicated their age as ‘31-40’. Lastly, both of the participants who indicated their marital status as ‘Widowed’ fell into the ‘61 or over’ age range.

When comparing marital status and highest level of education, it is interesting to note that the ‘Single/Never married’ category was the only one that had at least one individual in each category of education. In that particular case, of the 28 individuals who were ‘Single/Never married’ the highest number of individuals indicated that they had earned a 4-year degree- for a total of 8. Next, 7 individuals indicated that they had

earned a high school diploma or GED. There was 1 individual each in the ‘Doctoral Degree’ and ‘Professional Degree’ categories. Of the 2 individuals who indicated that their marital status as ‘Co-Habiting’, both of them fell into the ‘4-Year degree’ category of highest level of education. Similarly, of the 2 individuals who indicated their marital status as ‘Separated’, both of them fell into the ‘Less than high school’ category of highest level of education. Of the 6 individuals that indicated their marital status as divorced, and also indicated their highest level of education- half of them fell into the ‘Some College’ category. One of them indicated that they has earned a high school diploma or GED, and the other 2 indicated their highest level of education as ‘2-Year Degree’ and ‘4-Year Degree’ respectively. The 1 participant that indicated their marital status as ‘Widowed’ and highest level of education fell into the ‘2-Year Degree’ category.

When comparing marital status and the annual income of participants, of the 25 participants who indicated their marital status as ‘Single/Never married’ and their household annual income, 6 participants indicated that they fell into the ‘\$10,000-\$19,999’ income range. Four fell into the ‘\$30,000-\$39,999’ income range, and 3 participants fell into each of the ‘Less than \$10,000’, ‘\$20,000-\$29,999’, and ‘\$40,000-\$49,999’ categories. Of the 19 participants who indicated their household annual income and fell into the ‘Married’ category, 3 participants each indicated that they fell into the ‘\$50,000-\$59,000’ and ‘\$100,000-\$149,999’ categories. Two married participants fell into each of these annual household income categories: ‘Less than \$10,000’, ‘\$10,000-\$19,999’, ‘\$20,000-\$29,999’, ‘\$40,000-\$49,999’, ‘\$70,000-\$79,000’, and ‘More than \$150,000’. One fell into the ‘\$90,000-\$99,999’ category, and none of the married participants who indicated their household annual income fell into the ‘\$30,000-\$39,999’ category. Both of the participants who indicated their

marital status as ‘Co-Habiting’ also indicated their annual household income as ‘\$50,000-\$59,999’. Of the 3 participants who indicated their marital status as ‘Separated’ and also indicated household annual income, 2 of the participants fell into the ‘\$20,000-\$29,999’ category, and 1 of the participants fell into the ‘\$10,000-\$19,999’ category. Of the 7 participants who indicated their marital status as ‘Divorced’ and the annual household income, 3 of them fell into the ‘\$20,000-\$29,999’ category. The 4 remaining participants were distributed even among the ‘\$10,000-\$19,999’, ‘\$30,000-\$39,999’, ‘\$40,000-\$49,999’, and ‘\$90,000-\$99,999’ categories of annual household income. Of the 2 participants who indicated their marital status as ‘Widowed’ and their annual household income, they fell into the ‘\$40,000-\$49,999’ and ‘\$50,000-\$59,999’ categories respectively.

The survey asked participants to indicate their race. The categories were as follows: ‘white/non-Hispanic’; ‘African-American’; ‘Hispanic’; ‘Asian/Pacific Islander’; and ‘Native American’. Out of the 71 total participants, 9 (12.7%) did not provide a response, for a calculated response rate of 87.32%. The most common response was ‘African-American’, with 24 participants (33.8%). Eighteen participants (25.4%) indicated their race as Hispanic. White/non-Hispanics made up 11 (15.5%) of the participants. Asian/Pacific Islanders made up 6 (8.5%) of the participants and, 2 participants (2.8%) indicated their race as ‘Native American’. Finally, 1 participant went outside of the given options and wrote that they consider themselves ‘white and Hispanic’. When comparing race and gender, 23 out of 59 participants who provided both their race and gender indicated that they are African-American- 15 of whom indicated that they are male, 8 of whom indicated that they are female. Seventeen out of 59 participants who provided both their race and gender indicated that they are Hispanic- 13 out of the 17 indicated that they are male, 4 out of the 17 indicated that

they are female. Eleven out of 59 participants provided both their race and gender and indicated that they are white/non-Hispanic- 8 of whom indicated that they are male, 3 of whom indicated that they are female. Five out of 59 participants who provided both their race and gender indicated that they are Asian/Pacific Islander- 3 of whom indicated that they are female, 2 of whom indicated that they are male. Two out of 59 participants who provided both their race and gender indicated that they are Native American- both of whom indicated that they are male. One participant who provided both their race and gender indicated that they are white and Hispanic, and female. The highest number of participants who indicated both their race and gender fell under the categories of African-American and male. The highest number of females who indicated both their race and gender were African-American.

When comparing race and age, 61 out of 71 total participants indicated both their race and age, for a calculated response rate of 85.91%. The highest number of participants indicated that they are African-American and between the ages of 41-50, for a total of 13. Only 1 participant in the 18-21 age range also indicated their race as African-American. Two participants indicated that they fall in the '22-25' age range and are white/non-Hispanic. Of the 3 participants who provided their race and indicated their age as between 22-25, 3 participants were African-American, 2 participants were Asian/Pacific Islander, and 1 participant was Hispanic. Of the 15 participants who provided both race and indicated their age as between 31-40, 3 participants were white/non-Hispanic, 3 participants were African-American, 5 participants were Hispanic, and 4 participants were Asian/Pacific Islander. Of the 25 participants who provided both race and indicated their age as between 41-50, 13 participants were African-American, 6 participants were Hispanic, 4 participants were white/non-Hispanic, 1 participant was Native American, and 1 participant was white

and Hispanic. Of the 8 participants who provided both race and indicated their age as between 51-60, 4 participants were Hispanic, 2 participants were African-American, 1 participant was white/non-Hispanic, and 1 participant was Native American. Of the 4 participants who provided both race and indicated their age as 61 or over, 2 participants were African-American, 1 participant was white/non-Hispanic, and 1 participant was Hispanic. When comparing race and highest level of education, 58 out of 71 participants indicated both their race and highest level of education, for a calculated response rate of 81.69%. The highest number of participants indicated that they are African-American and have a high school education or GED, for a total of 8. Of the 5 participants who provided their race and indicated that they have less than a high school education, 1 participant was African-American, 3 participants were Hispanic, and 1 participant was Native American. Of the 12 participants who provided their race and indicated that they have a high school education or GED, 8 participants were African-American and 4 participants were Hispanic. Of the 12 participants who provided their race and indicated that they have received some college education, 1 participant was White/non-Hispanic, 7 participants were African-American, and 4 participants were Hispanic. Of the 5 participants who provided their race and indicated that they have a 2-year college degree, 3 participants were white/non-Hispanic, 1 participant was African-American, and 1 participant was Native American. Of the 14 participants who provided their race and indicated that they have a 4-year college degree, 3 participants were white/non-Hispanic, 4 participants were African-American, 5 participants were Hispanic, 1 participant was Asian/Pacific Islander, and 1 participant was white and Hispanic. Of the 7 participants who provided their race and indicated that they have a Master's Degree, 2 participants were white/non-Hispanic, 1 participant was African-American, 1 participant was Hispanic, and 3 participants were Asian/Pacific Islander. The 1 participant who provided their

race and indicated that they hold a doctoral degree was Asian/Pacific Islander. Of the 2 participants who provided their race and indicated that they have a Professional Degree, 1 participant was white/non-Hispanic, and 1 participant was Asian/Pacific Islander.

When comparing race and household annual income, 54 out of 71 participants indicated both their race and their household annual income, for a calculated response rate of 76.06%. The highest number of participants indicated that they are Hispanic and have a household annual income of \$10,000-\$19,999, for a total of 5. Of the 5 participants who provided their race and indicated that their household annual income is less than \$10,000, 1 participant was white/non-Hispanic, 2 participants were African-American, and 2 participants were Hispanic. Of the 10 participants who provided their race and have a household annual income of \$10,000-\$19,999, 2 participants were white/non-Hispanic, 3 participants were African-American, and 5 participants were Hispanic. Of the 9 participants who provided their race and have a household annual income of \$20,000-\$29,999, 4 participants were African-American, 3 participants were Hispanic, and 2 participants were Native American. Of the 5 participants who provided the race and have a household annual income of \$30,000-\$39,000, 3 participants were African-American, 1 participant was Hispanic, and 1 participant was Asian/Pacific Islander. Of the 6 participants who provided their race and have a household annual income of \$40,000-\$49,999, 3 participants were white/non-Hispanic, and 3 participants were African-American. Of the 7 participants who provided their race and have a household annual income of \$50,000-\$59,999, 1 participant was white/non-Hispanic, 3 participants were African-American, and 3 participants were Hispanic. There were no participants who provided their race and indicated their household annual income of \$60,000-\$69,999. All 3 of the participants

who provided their race and have a household annual income of \$70,000-\$79,999 were African-American. There were no participants who provided their race and indicated their household annual income of \$80,000-\$89,999. Of the 2 participants who provided their race and indicated their household annual income of \$90,000-\$99,999, 1 participant was African-American, and 1 participant was Asian/Pacific Islander. Of the 5 participants who provided their race and have a household annual income of \$100,000-\$149,999, 2 participants were white/non-Hispanic, and 3 participants were Asian/Pacific Islander. Of the 2 participants who provided their race and have a household annual income of \$150,000 or more, 1 participant was white/non-Hispanic and 1 participant was Asian/Pacific Islander.

When comparing race and marital status, 61 out of 71 participants indicated both their race and marital status, for a calculated response rate of 85.91%. The highest number of participants indicated that they are African-American and single/never married, for a total of 11. Of the 28 participants who provided their race and are single/never married, 6 participants were white/non-Hispanic, 11 participants were African-American, 6 participants were Hispanic, 4 participants were Asian/Pacific Islander, and 1 participant was Native American. Of the 20 participants who provided their race and are married, 4 participants were white/non-Hispanic, 4 participants were African-American, 8 participants were Hispanic, 2 participants were Asian/Pacific Islander, and 1 participant was Native American. Of the 2 participants who provided their race and are co-habiting, 1 participant was African-American, and 1 participant was Hispanic. Of the 3 participants who provided their race and are separated, 1 participant was African-American, and 2 participants were Hispanic. Of the 6 participants who provided their race and are divorced, 5 participants were African-American and 1 participant was Hispanic. Of the 2 participants who provided

their race and were widowed, 1 participant was white/non-Hispanic, and 1 participant was African-American.

For the question, ‘What type of building do you live in?’ participants were given 3 categories: ‘Apartment’; ‘Single-family/Detached’; or ‘Condominium’, and were asked to circle their answer or write in their answer. Some participants chose to provide other answers besides those provided. Sixty-five out of 71 participants provided a response, for a calculated response rate of 91.55%. The mean response was ‘2’, indicating that on average, participants live in single-family/detached homes. The mode response was ‘1’; 42 participants (59.2%) indicated that they live in apartments. Fourteen participants (19.7%) indicated that they live in single-family/detached homes; 4 participants (5.6%) indicated that they live in a condominium; 3 participants (4.2%) indicated that they live in a co-op; 1 participant (1.4%) indicated that they live in a two-family home; and lastly, 1 participant indicated that they live in a brownstone.

When comparing housing type and gender, 62 out of 71 participants indicated both the type of building they live in and their gender, for a calculated response rate of 87.32%. The highest number of participants indicated that they live in an apartment and are male, for a total of 26. Of the 40 participants who live in an apartment and indicated their gender, 26 participants were male, and 14 participants were female. Of the 13 participants who live in single-family/detached homes and provided their gender, 11 participants were male and 2 participants were female. All 4 of the participants who live in condominiums and provided their gender were male. The 1 participant who lives in a two-family home and provided their gender was female. Of the 3 participants who live in a co-op and provided their gender, 2 participants were

male, and 1 participant was female. The 1 participant who lives in a brownstone and provided their gender was female.

When comparing housing type and age, 64 out of 71 participants indicated both the type of building they live in and their age, for a calculated response rate of 90.14%. The highest number of participants indicated that they live in an apartment and are in the '41-50' age range, for a total of 18. The 1 participant who is in the '18-21' age range and indicated their housing type lives in an apartment. Of the 2 participants who indicated their housing type and are in the '22-25' age range both live in apartments. Of the 5 participants who indicated their housing type and are in the '26-30' age range, 3 participants live in apartments, 1 participant lives in a single-family/detached home, and 1 participant lives in a condominium. Of the 19 participants who indicated their housing type and are in the '31-40' age range, 11 participants live in an apartment, 6 participants live in a single-family/detached home, 1 participant lives in a condominium, and 1 participant lives in a co-op. Of the 24 participants who indicated their housing type and are in the '41-50' age range, 18 participants live in an apartment, 3 participants live in a single-family/detached home, 1 participant lives in a condominium, 1 participant lives in a two-family home, and 1 participant lives in a brownstone. Of the 9 participants who indicated their housing type and are in the '51-60' age range, 5 participants live in an apartment, 2 participants live in a single-family/detached home, 1 participant lives in a condominium, and 1 participant lives in a co-op. Of the 4 participants who indicated their housing type and are '61 or over', 1 participant lives in an apartment, 2 participants live in single-family/detached homes, and 1 participant lives in a co-op.

When comparing housing type and highest level of education, 60 out of 71 participants indicated both the type of building they live in and their highest level of education, for a calculated response rate of 84.50%. The highest number of

participants indicated that live in an apartment and have a 4-year college degree, for a total of 12. Of the 6 participants who indicated their housing type and have less than a high school education, 4 participants live in an apartment, and 2 participants live in a single-family/detached home. Of the 13 participants who indicated their housing type and have a high school education/GED, 8 participants live in an apartment, 4 participants live in a single-family/detached home, and 1 participant lives in a condominium. Of the 13 participants who indicated their housing type and have received some college education, 10 participants live in an apartment, 2 participants live in a single-family/detached home, and 1 participant lives in a condominium. Of the 6 participants who indicated their housing type and have a 2-year college degree, 2 participants live in an apartment, 2 participants live in a single-family/detached home, 1 participant lives in a co-op, and 1 participant lives in a brownstone. Of the 13 participants who indicated their housing type and have a 4-year college degree, 12 participants live in an apartment and 1 participant lives in a co-op. Of the 7 participants who indicated their housing type and have a Master's degree, 2 participants live in an apartment, 2 participants live in single-family/detached home, 2 participants live in a condominium, and 1 participant lives in a two-family home. Of the 2 participants who indicated their housing type and have a professional degree, 1 participant lives in a single-family/detached home, and 1 participant lives in a brownstone.

When comparing housing type and household annual income, 60 out of 71 participants indicated both the type of building they live in and their household annual income, for a calculated response rate of 84.50%. The highest number of participants indicated that they live in an apartment and have a household annual income of \$10,000-\$19,999- for a total of 9. Of the 5 participants who provided their housing type and have a household annual income of less than \$10,000, 3 participants live in

an apartment, and 2 participants live in a single-family/detached home. Of the 10 participants who indicated their housing type and have a household annual income of \$10,000-\$19,999, 9 participants live in an apartment, and 1 participant lives in a single-family/detached home. Of the 10 participants who indicated their housing type and have a household annual income of \$20,000-\$29,999, 6 participants live in an apartment, and 4 participants live in a single-family/detached home. All 5 of the participants who indicated their housing type and have a household annual income of \$30,000-\$39,999 live in an apartment. Of the 7 participants who indicated their housing type and have a household annual income of \$40,000-\$49,999, 6 participants live in an apartment and 1 participant lives in a co-op. Of the 8 participants who indicated housing type and have a household annual income of \$50,000-\$59,999, 4 participants live in an apartment, 1 participant lives in a single-family/detached home, 2 participants live in condominiums, and one participant lives in a co-op. There were no participants who indicated their housing type and had a household annual income of \$60,000-\$69,999. Of the 3 participants who indicated their housing type and have a household annual income of \$70,000-\$79,999, 1 participant lives in an apartment, 1 participant lives in a single-family/detached home, and 1 participant lives in a two-family home. There were no participants who indicated their housing type and have a household annual income of \$80,000-\$89,999. Of the 2 participants who indicated their housing type and have a household annual income of \$90,000-\$99,999, 1 participant lives in a single-family/detached home and 1 participant lives in a brownstone. Of the 5 participants who indicated their housing type and have a household annual income of \$100,000-\$149,999, 3 participants live in an apartment, and 2 participants live in single-family/detached homes. Of the 2 participants who indicated both their housing type and have a household annual income of more than \$150,000, 1 participant lives in a condominium, and 1 participant lives in a co-op.

When comparing housing type and marital status, 64 out of 71 participants provided both the type of building they live in and their marital status, for a calculated response rate of 90.14%. The highest number of participants indicated that they live in an apartment, and are single/never-married, for a total of 19. Of the 28 participants who indicated their housing type and are single/never-married, 19 participants live in an apartment, 6 participants live in a single-family/detached home, 1 participant lives in a condominium, 1 participant lives in a two-family home, and 1 participant lives in a co-op. Of the 23 participants who indicated their housing type and are married, 12 participants live in an apartment, 7 participants live in a single-family/detached home, 3 participants live in a condominium, and 1 participant lives in a co-op. Both of the participants who indicated their housing type and are co-habiting indicated that they live in an apartment. Each of the 3 participants who indicated their housing type and are separated live in an apartment. Of the 6 participants who indicated their housing type and are divorced, 4 participants live in an apartment, 1 participant lives in a single-family/detached home, and 1 participant lives in a brownstone. Of the 2 participants who indicated their housing type and are widowed, 1 participant lives in an apartment, and 1 participant lives in a co-op.

When comparing housing type and race, 59 out of 71 participants provided both the type of building they live in and their race, for a calculated response rate of 83.09%. The highest number of participants indicated that they live in an apartment and are African-American, for a total of 16. Of the 10 participants who indicated their housing type and are white/non-Hispanic, 6 participants live in an apartment, 1 participant lives in a single-family/detached home, 1 participant lives in a condominium, and 2 participants live in a co-op. Of the 24 participants who indicated their housing type and are African-American, 16 participants live in an apartment, 4 participants live in a single-family/detached home, 2 participants live in a

condominium, 1 participant lives in a two-family home, and 1 participant lives in a brownstone. Of the 17 participants who indicated their housing type and are Hispanic, 14 participants live in an apartment, 2 participants live in a single-family/detached home, and 1 participant lives in a condominium. Of the 5 participants who indicated their housing type and are Asian/Pacific Islander, 2 participants live in an apartment, 2 participants live in a single-family/detached home, and 1 participant lives in a co-op. Both of the participants who indicated their housing type and are Native American live in a single-family/detached home. The 1 participant who indicated their housing type and identified their race as white and Hispanic lives in an apartment.

Participants were asked to indicate the year their home was built. Forty-six out of 71 participants provided a response, for a calculated response rate of 64.78%. The mean response was '2', indicating that on average, participants live in homes that were built between 1961 and 1978. The mode response was also '1'; 25 participants (35.2%) indicated that live in homes that were built between 1860 and 1960. Ten participants (14.1%) indicated that they live in homes built between 1978-2006; 4 participants (5.6%) indicated their answer as 'N/A'. Finally, just 3 participants (4.2%) indicated that they don't know what year their homes were built.

When comparing year home built and gender, 44 out of 71 participants indicated the year their home was built and their gender, for a calculate response rate of 61.97%. The highest number of male participants, 16, indicated that they lived in a home that was built between 1860-1960. The highest number of female participants, 9, also indicated that their home was built between 1860-1960. Of the 4 participants who indicated that their home was built between 1961-1978, 3 were male, and 1 was female. Of the 8 participants who indicated that their home was built between 1979-2006, 2 were male and 6 were female. Of the 4 participants who indicated 'N/A', 3

were male and 1 was female. Of the 3 participants who indicated that they don't know the year their home was built, 2 were male and 1 was female.

When comparing year home built and age, 45 out of 71 participants indicated the year their home was built and their age, for a calculated response rate of 63.38%. The highest number of participants indicated that they are between the ages of 31-40 and that their homes were built between 1860-1960- for a total of 11. Ten participants indicated that they are between the ages of 41-50 and that their homes were built between 1860-1960. Of the 24 participants who indicated that their homes were built between 1860-1960, 1 participant was between the ages of 22-25, 11 participants were between the ages of 31-40, 10 participants were between the ages of 41-50, and 2 participants were age 61 or older. Of the 4 participants who indicated that their homes were built between 1961-1978, 1 participant indicated that they are between the ages of 22-25, 2 participants indicated that they are between the ages of 31-40, and 1 participant indicated that they are between the ages of 51-60. Of the 10 participants who indicated that their homes were built between 1978-2006, 3 of the participants indicated that they are between the ages of 26-30, 5 participants indicated that they are between the ages of 31-40, and 2 participants indicated that they are between the ages of 51-60. Of the 4 participants who indicated 'N/A' as their response, there was 1 participant in each of these age ranges: '26-30', '31-40', '41-50', and '51-60'. Of the 3 participants who indicated that they don't know when their home was built, 1 participant indicated that they are between the ages of 26-30, and 2 participants indicated that they are between the ages of 41-50.

When comparing year home built and highest level of education, 43 out of 71 participants indicated the year their home was built and their highest level of education, for a calculated response rate of 60.56%. The highest number of participants indicated

that they have had ‘Some College’ and that their home was built between 1860-1960, for a total of 6. Of the 22 participants who indicated that their home was built between 1860-1960, 1 participant has a high school diploma/GED, 6 participants had some college, 4 participants have a 2-year degree, 5 participants have a 4-year degree, 4 participants have a Master’s degree, and 2 participants have a Professional degree. Of the 4 participants who indicated that their homes were built between 1961-1978, 1 participant has a high school diploma/GED, 1 participant has had some college education, and 2 participants have a 4-year degree. Of the 10 participants who indicated that their homes were built between 1979-2006, 3 participants have a high school diploma/GED, 1 participant has had some college education, 3 participants have a 4-year degree, 2 participants have a Master’s degree, and 1 participant holds a Doctoral degree. Of the 4 participants who indicated ‘N/A’ as their response, 2 participants have less than a high school diploma, 1 participant has a high school diploma/GED, and 1 participant has a 4-year degree. Of the 3 participants who indicated that they don’t know when their home was built, 1 participant has less than a high school diploma, 1 participant has a high school diploma/GED, and 1 participant has some college education.

When comparing year home built and household annual income, 42 out of 71 participants indicated both the year their home was built and their household annual income, for a calculated response rate of 59.15%. The highest number of participants indicated that their homes were built between 1860-1960 and that their household annual income is between \$10,000-\$19,999- for a total of 5. Five participants also indicated that their homes were built between 1860-1960 and that their household annual income is between \$50,000-\$59,999. Of the 23 participant who indicated that their homes were built between 1860-1960, 2 participants have a household annual income of less than \$10,000, 5 participants have a household annual income of

\$10,000-\$19,999, 3 participants have a household annual income of \$40,000-\$49,999, 5 participants have a household annual income of \$50,000-\$59,999, 2 participants have a household annual income of \$70,000-\$79,999, 1 participant has a household annual income of \$90,000-\$99,999, 4 participants have a household annual income of \$100,000-\$149,999, and 1 participant has a household annual income of more than \$150,000. Of the 3 participants who indicated that their homes were built between 1961-1978, 1 participant has a household annual income of \$10,000-\$19,999, 1 participant has a household annual income of \$30,000-\$39,999, and 1 participant has a household annual income of \$90,000-\$99,999. Of the 10 participants who indicated that their homes were built between 1978-2006, 1 participant fell into each of the following household annual income ranges: 'less than \$10,000'; '\$10,000-\$19,999'; '\$20,000-\$29,999'; '\$40,000-\$49,999'; '\$50,000-\$59,999'; '\$90,000-\$99,999'; '\$100,000-\$149,999'; and 'more than \$150,000'. Two participants indicated that their household annual income is between \$30,000-\$39,999. Of the 3 participants who responded 'N/A' and provided their household annual income, 2 participants have a household income of \$20,000-\$29,999, and 1 participant has a household annual income of \$50,000-\$59,999. Lastly, of the 3 participants who indicated that they don't know when their homes were built and also provided their household annual income, 2 participants have a household annual income of \$20,000-\$29,999, and 1 participant has a household annual income of \$30,000-\$39,999.

When comparing year home built and marital status, 45 out of 71 participants indicated both the year their home was built and their marital status, for a calculated response rate of 63.38%. The highest number of participants indicated that they are single/never married and that their home was built between 1860-1960- for a total of 12. Of the 25 participants who indicated that their homes were built between 1860-1960 and provided their marital status, 12 participants are single, never married, 7

participants are married, 2 participants are co-habiting, 1 participant is separated, 1 participant is divorced, and 2 participants are widowed. Of the 4 participants who indicated that their homes were built between 1961-1978 and provided their marital status, 3 participants are single/never married, and 1 participant is married. Of the 10 participants who indicated that their homes were built between 1979-2006 and provided their marital status, 5 participants are single/never married, and 5 participants are married. Of the 4 participants who responded 'N/A' and provided their marital status, 2 participants are single/ never married, 1 participant is married, and 1 participant is separated. Finally, of the 2 participants who don't know when their homes were built and provided their marital status, 1 participant is single/never married, and 1 participant is separated.

When comparing year home built and race, 42 out of 71 participants indicated both the year their home was built and their race, for a calculated response rate of 59.15%. The highest number of participants indicated that their homes were built between 1860-1960 and that they are African-American- for a total of 8 participants. Of the 23 participants who indicated that their homes were built between 1860-1960 and provided their race, 6 participants are white/non-Hispanic, 8 participants are African-American, 6 participants are Hispanic, and 3 participants are Asian/Pacific Islander. Of the 4 participants who indicated that their homes were built between 1961-1978 and provided their race, 1 participant is white/non-Hispanic, 1 participant is African-American, and 2 participants are Hispanic. Of the 9 participants who indicated that their homes were built between 1979-2006 and provided their race, 1 participant is white/non-Hispanic, 3 participants are African-American, 2 participants are Hispanic, and 3 participants are Asian/Pacific Islander. Of the 3 participants who responded 'N/A' and provided their race, 1 participant is white/non-Hispanic, 1 participant is African-American, and 1 participant is Hispanic. Lastly, of the 3

participants who indicated that they don't know when their homes were built and provided their race, 2 participants are African-American, and 1 participant is Hispanic.

When comparing year home built and the type of building in which the participant lives- 44 out of 71 participants provided both the year their home was built and the type of building they live in, for a calculate response rate of 61.97%. The highest number of participants indicated that their home was built between 1860-1960 and that they live in an apartment, for a total of 14 participants. Of the 24 participants who indicated that their home was built between 1860-1960 and the type of building in which they live, 14 participants live in an apartment, 5 participants live in a single-family/detached, 1 participant lives in a condominium, 1 participant lives in a two-family home, 2 participants live in a co-op, and 1 participant lives in a brownstone. Of the 4 participants who indicated that their home was built between 1961-1978 and the type of building in which they live, all 4 live in an apartment. Of the 9 participants who indicated that their home was built between 1979-2006 and the type of building in which they live, 6 participants live in an apartment, 2 participants live in a single-family/detached home, and 1 participant lives in a condominium. Of the 4 participants who responded 'N/A' and provided the type of building in which they live, 2 participants live in an apartment, 1 participant lives in a single-family/detached home, and 1 participant lives in a co-op. Lastly, of the 3 participants who indicated that they don't know when their home was built and provided the type of building in which they live, all 3 participants live in an apartment.

Participants were asked to indicate if a lead assessment has been done in their home- if their home was built prior to 1978. Thirty-nine out of 71 participants provided a response, for a calculated response rate of 54.93%. The mean response was '2', indicating that on average, participants living in homes built prior to 1978 had not had a lead assessment done in their home. The mode response was also '2'; 26

participants (36.6%) with have not had a lead assessment done in their home. Eight participants (11.3%) indicated that they have had a lead assessment done in their home. Three participants (4.2%) indicated that they don't know if a lead assessment has been done in their home; lastly, 2 participants (2.8%) indicated their answer as 'N/A'.

When comparing whether or not participants (whose homes were built prior to 1978) have had a lead assessment on their home and the gender of participants, 39 out of 71 participants provided answers for both questions, for a calculated response rate of 54.93%. The highest number of participants responded that are male and that they had not had a lead assessment done on their home, for a total of 17. Of the 8 participants who indicated both their gender and that they have had a lead assessment done in their home, 6 participants were female, and 2 participants were male. Of the 26 participants who indicated both their gender and that they had not had a lead assessment done in their home, 17 participants were male and 9 participants were female. Of the 3 participants who indicated that they don't know if a lead assessment has been done in their home, 2 participants were male and 1 participant was female. Of the 2 participants that indicated 'N/A', 1 participant was male and 1 participant was male.

When comparing whether or not participants (whose homes were built prior to 1978) have had a lead assessment on their home and their household annual income, 36 out of 71 participants indicated both their household annual income and whether they have had a lead assessment on their home, for a calculated response rate of 50.70%. The highest number of total responses came from participants with a household annual income of \$10,000-\$19,999, for a total of 8 responses. Of the 3 participants who indicated that their household annual income is less than \$10,000, 2 participants indicated that they have not had a lead assessment in their home, and 1 participant indicated that they don't know if a lead assessment has been done in their

home. Of the 8 participants who indicated that their annual household income is \$10,000-\$19,999, 1 participant has had a lead assessment in their home, 4 participants have not had a lead assessment in their home, 1 participant doesn't know if a lead assessment has been done in their home, and 2 participants indicated 'N/A'. The one participant who indicated their household annual income to be \$30,000-\$39,999 has had a lead assessment in their home. Of the 4 participants who indicated their household annual income to be \$40,000-\$49,999, 1 participant has had a lead assessment in their home and the remaining 3 participants have not had a lead assessment. Of the 5 participants who indicated their household annual income to be \$50,000-\$59,999, 2 participants have had a lead assessment in their home, and 3 participants have not had a lead assessment. Of the 2 participants who indicated their household annual income to be \$70,000-\$79,999, 1 of the participants has had a lead assessment in their home, and the other participant has not. Of the 6 participants who indicated their household annual income to be \$100,000-\$149,999, 1 participant has had a lead assessment, and 5 participants have not. Lastly, 1 participant indicated their household annual income to be more than \$150,000 and that they have not had a lead assessment in their home.

When comparing whether or not participants (whose homes were built prior to 1978) have had a lead assessment in their home and the age of participants, 38 out of 71 participants provided answers to both questions, for a calculated response rate of 53.52%. The highest number of participants indicated that they are between the ages of 41-50 and that they have not had a lead assessment done in their home, for a total of 10. Of the 8 participants who indicated their age and that they have had a lead assessment done in their home, 4 participants are between the ages of 31-40, 2 participants are between the ages of 41-50, 1 participant is between the ages of 51-60, and 1 participant is age 61 or older. Of the 25 participants who indicated both their

age and that they have not had a lead assessment done in their home, 1 participant is between the ages of 22-25, 4 participants are between the ages of 26-30, 7 participants are between the ages of 31-40, 10 participants are between the ages of 41-50, 2 participants are between the ages of 51-60, and 1 participant is age 61 or older. Of the 3 participants who indicated their age and that they don't know if a lead assessment has been done in their home, 2 participants are between the ages of 41-50, and 1 participant is between the ages of 51-60. Of the 2 participants who indicated their age and responded 'N/A', 1 participant was between the ages of 22-25, and 1 participant was between the ages of 31-40.

When comparing whether or not participants (whose homes were built prior to 1978) have had a lead assessment on their home and the highest level of education the participant has received, 35 out of 71 participants provided answers to both questions, for a calculated response rate of 49.30%. The highest number of participants indicated that their highest level of education is a high school diploma/GED and that they have not had a lead assessment in their home. Of the 6 participants who indicated both their highest level of education and that they have had a lead assessment done in their home, 2 participants have a high school diploma/GED, 1 participant has some college education, 1 participant has a 2-year degree, 1 participant has a 4-year degree, and 1 participant has a Master's degree. Of the 24 participants who indicated both their highest level of education that they have not had a lead assessment in their home, 1 participant does not have a high school diploma/GED, 5 participants have a high school diploma/GED, 4 participants have some college education, 4 participants have a 2-year degree, 4 participants have a 4-year degree, 2 participants have a Master's degree, 1 participant has a Doctoral degree, and 1 participant has a Professional degree. Of the 3 participants who indicated both their highest level of education and that they don't know if a lead assessment has been done in their home, 1 participant has a high

school diploma/GED, 1 participant has some college education, and 1 participant has a 4-year degree. Of the 2 participants who indicated both their highest level of education and responded 'N/A', 1 participant has some college education, and the other participant has a 4-year degree.

When comparing whether or not participants (whose homes were built prior to 1978) have had a lead assessment on their home and their marital status, 38 out of 71 participants provided answers to both questions, for a calculated response rate of 53.52%. The highest number of participants indicated that they are single/never married, and that they have not had a lead assessment done in their home, for a total of 13. Of the 19 participants who indicated both that they are single/never married, and whether or not a lead assessment has been done in their home, 4 participants indicated that a lead assessment has been performed, 13 participants indicated that a lead assessment has not been done, and 2 participants indicated that they don't know if a lead assessment has been done. Of the 8 participants who indicated that they are married and whether or not a lead assessment has been performed in their home, 2 participants indicated that a lead assessment has been done, and 6 participants indicated that a lead assessment has not been done. Of the 2 participants who indicated both that that they are co-habiting, and whether or not a lead assessment has been done in their home, both participants indicated that a lead assessment has not been done in their home. Of the 2 participants who indicated that they are separated and whether or not a lead assessment has been done in their home, 1 participant has not had a lead assessment done in their home, and the other participant doesn't know if a lead assessment has been done in their home. Lastly, of the 3 participants who indicated both that they are divorced, and whether or not a lead assessment has been done in their home, 1 participant indicated that a lead assessment has been done in

their home, and 2 participants indicated that a lead assessment has not been done in their home.

When comparing whether or not participants (whose homes were built prior to 1978) have had a lead assessment done on their home and their race, 35 out of 71 participants provided answers to both questions for a calculated response rate of 49.30%. The highest number of participants indicated that they are African-American and that they have not had a lead assessment done in their home. Of the 6 participants who indicated that a lead assessment has been done on their home, 1 participant indicated that they are white/non-Hispanic, 3 of the participants indicated that they are African-American, and 2 participants indicated that they are Hispanic. Of the 24 participants who indicated who indicated that a lead assessment has not been done in their home, 5 participants indicated that they are white/non-Hispanic, 8 participants indicated that they are African-American, 6 participants indicated that they are Hispanic, 4 participants indicated that they are Asian/Pacific Islander, and 1 participant indicated that they are Native American. Of the 3 participants who indicated that they don't know if a lead assessment has been done in their home, 2 participants indicated that they are African-American, and 1 participant indicated that they are Hispanic. Of the 2 participants who indicated 'N/A' as their response, 1 participant indicated that they are white/non-Hispanic, and the other participant indicated that they are Hispanic.

When comparing whether or not participants (whose homes were built prior to 1978) have had a lead assessment done on their home and the type of building in which they live, 38 out of 71 participants provided responses to both questions, for a calculated response rate of 53.52%. Of the 8 participants who indicated that a lead assessment has been done in their home, 5 participants indicated that they live in an apartment, and 3 participants indicated that they live in a single-family/detached home.

Of the 25 participants who indicated that a lead assessment has not been done in their home, 15 participants indicated that they live in an apartment, 6 participants indicated that they live in a single-family/detached home, 1 participant indicated that they live in a condominium, 1 participant indicated that they live in a two-family home, and 2 participants indicated that they live in a co-op. Of the 3 participants who indicated that they don't know if a lead assessment has been done in their home, all 3 participants indicated that they live in an apartment. Lastly, of the 2 participants who indicated 'N/A', both indicated that they live in an apartment.

When comparing whether or not participants (whose homes were built prior to 1978) have had a lead assessment done on their home and the year their home was built, 33 out of 71 participants provided responses to both questions, for a calculated response rate of 46.48%. Of the 7 participants who indicated that a lead assessment has been done on their home, 6 participants indicated that their home was built between the years of 1860-1960, and 1 participant indicated that their home was built between the years of 1961-197. Of the 22 participants who indicated that a lead assessment has not been done on their home, 14 participants indicated that their home was built between the years of 1869-1960, 1 participant indicated that their home was built between the years of 1961-1978, 4 participants indicated that their home was built between 1978-2006, 2 participants indicated 'N/A', and 1 participant indicated that they don't know the year their home was built. Of the 2 participants who indicated that they don't know if a lead assessment has been done in their home, 1 participant indicated that their home was built between the years of 1860-1960, and one participant indicated that they don't know the year their home was built. Lastly, of the 2 participants who indicated 'N/A', 1 participant indicated that their home was built between the years of 1860-1960, and the other participant indicated that their home was built between the years of 1961-1978.

Section II: Analyses for the Part 1 and 2 of the survey

The survey asked participants to fill out a chart indicating how often they performed 12 basic household tasks. These tasks were as follows: 'Take out the trash', 'Wash dishes', 'Vacuum', 'Sweep', 'Wet mop', 'Damp wipe window sills', 'Wipe counters', 'Dry dust', 'Dust with a damp cloth', 'Wash the bedding', 'Vacuum/clean mattresses', and 'Empty the bag or filter in vacuum'. The choices for frequency of task performance were as follows: 'More than once a day', 'Once a day', 'Twice a week', 'Once a week', 'Less than once a week', and 'N/A'. The frequency of task performance corresponded to the numbers 1-6, respectively.

For the first task, 'Take out the trash', 66 of 71 total participants provided an answer, for a calculated response rate of 92.95%. The mean response was 2, indicating that on average, the participants take out their trash once a day. The mode response was also 2; 36 participants (50.7%) indicated that they take out their trash once a day. Seventeen participants (23.9%) indicated that they take out their trash twice a week, and 12 participants (16.9%) indicated that they take out their trash more than once a day. Just 1 participant (1.4%) indicated that they take out their trash less than once a week. None of the participants indicated 'N/A' as their response to this question.

For the second task, 'Wash dishes', 67 of 71 total participants provided an answer, for a calculated response rate of 94.36%. The mean response was 1, indicating that on average, the participants wash dishes more than once a day. The mode response was also 1; 45 participants (63.4%) indicated that they wash dishes more than once a day. Sixteen participants (22.5%) indicated that they wash dishes once a day, and 4 participants (5.6%) indicated that they wash dishes twice a week. Just 2 participants (2.8%) indicated that they wash dishes once a week. None of the

participants indicated that they wash dishes less than once a week, or indicated their answer as 'N/A'.

For the third task, 'Vacuum', 62 of 71 total participants provided an answer, for a calculated response rate of 87.32%. The mean response was 4, indicating that on average, the participants vacuumed once a week. The mode responses were 4, and 6, indicating that 17 participants (23.9%) vacuumed once a week, and 17 participants (23.9%) indicated the answer 'N/A' for vacuuming. Twelve participants (16.9%) indicated that they vacuum twice a week, and 10 participants (14.1%) indicated that they vacuum once a week. Four participants (5.6%) indicated that they vacuum once a day, and just 2 participants (2.8%) indicated that they vacuum more than once a day.

For the fourth task, 'Sweep', 65 of 71 total participants provided an answer, for a calculated response rate of 91.55%. The mean response was 3, indicating that on average, the participants swept twice a week. The mode response was 1; 19 participants (26.8%) indicated that they sweep more than once a day. Fifteen participants (21.1%) indicated that they sweep once a day, and 13 participants (18.3%) indicated that they sweep twice a week. Nine participants (12.7%) indicated that they sweep once a week, and 6 participants (8.5%) indicated that they sweep less than once a week. Just 3 participants (4.2%) indicated 'N/A' as their answer.

For the fifth task, 'Wet mop', 66 of 71 total participants provided an answer, for a calculated response rate of 92.96%. The mean response was 3, indicating that on average, participants wet mop twice a week. The mode response was 3; 21 participants (29.6%) indicated that they wet mop twice a week. Eighteen participants (25.4%) indicated that they wet mop once a week, and 10 participants (14.1%) indicated that they wet mop once a day. Eight participants (11.3%) indicated that they

wet mop less than once a week and 6 participants (8.5%) indicated that they wet mop more than once a day. Just 3 participants (4.2%) indicated 'N/A'.

For the sixth task, 'Damp wipe window sills', 65 of 71 total participants provided an answer, for a calculated response rate of 91.55%. The mean response was 4, indicating that on average, participants damp wipe window sills once a week. The mode response was 5; 24 participants (33.8%) indicated that they damp wipe window sills less than once a week. Nineteen participants (26.8%) indicated that they damp wipe window sills once a week, and 9 participants (12.7%) indicated they damp wipe window sills twice a week. Eight participants (11.3%) indicated 'N/A' as their response. Three participants (4.2%) indicated that they damp wipe window sills more than once a day, and just 2 participants (2.8%) indicated that they damp wipe window sills once a day.

For the seventh task, 'Wipe counters', 65 of 71 total participants provided an answer, for a calculated response rate of 91.55%. The mean response was 2, indicating that on average, participants wipe counters once a day. The mode response was 1; 27 participants (38%) wipe counters more than once a day. Eighteen participants (25.4%) indicated that they wipe counters once a day. Eight participants (11.3%) indicated that they wipe counters once a week. Six participants (8.5%) indicated that they wipe counters twice a week and similarly, 6 participants (8.5%) indicated that they wipe counters less than once a week. No participants indicated 'N/A' as their response.

For the eighth task, 'Dry dust', 64 of 71 total participants provided a response, for a calculated response rate of 90.14%. The mean response was 4, indicating that on average, participants dry dust once a week. The mode response was also 4; 23 participants (32.4%) indicated that they dry dust once a week. Eleven participants

(15.5%) indicated that they dry dust once a day; similarly, 11 participants indicated that they dry dust less than once a week. Nine participants (12.7%) indicated that they dry dust twice a week, and 6 participants (8.5%) indicated 'N/A' as their response. Just 4 participants (5.6%) indicated that they dry dust more than once a day.

For the ninth task, 'Dust with a damp cloth', 65 out of 71 participants provided a response, for a calculated response rate of 91.55%. The mean response was 4, indicating that on average, participants dust with a damp cloth once a week. The mode response was 5; 19 participants (26.8%) indicated that they dust with a damp cloth less than once a week. Eighteen participants (25.4%) indicated that they dust with a damp cloth once a week. Twelve participants (16.9%) indicated that they dust with a damp cloth once a day, and 7 participants (9.9%) indicated that they dust with a damp cloth twice a week. Five participants (7%) indicated that they dust with a damp cloth more than once a day, and just 4 participants (5.6%) indicated 'N/A' as their response.

For the tenth task, 'Wash the bedding,' 64 out of 71 total participants provided a response, for a calculated response rate of 90.14%. The mean response was 4, indicating that on average, participants wash the bedding once a week. The mode response was also 4; 32 participants (45.1%) indicated that they wash the bedding once a week. Sixteen participants (22.5%) indicated that they wash the bedding twice a week, and 10 participants (14.1%) indicated that they wash the bedding less than once a week. Three participants (4.2%) indicated that they wash the bedding once a day, and 2 participants (2.8%) indicated 'N/A' as their answer. Just 1 participant (1.4%) indicated that their bedding is washed more than once a day.

For the eleventh task, 'Vacuum/clean mattresses', 63 out of 71 total participants provided a response, for a calculated response rate of 88.73%. The mean

response was 5, indicating that on average, participants vacuum/clean the mattress less than once a week. The mode response was also 5; 25 participants (35.2%) indicated that they vacuum/clean the mattress less than once a week. Nineteen participants (26.8%) indicated 'N/A' as their response. Ten participants (14.1%) indicated that they vacuum/clean the mattress once a week. Eight participants (11.3%) indicated that they vacuum/clean the mattress twice a week, and just 1 participant (1.4%) indicated that their mattress is vacuumed or cleaned more than once a day.

For the twelfth task, 'Empty the bag or filter in vacuum', 56 out of 71 total participants provided a response, for a calculated response rate of 78.87%. The mean response was 5, indicating that on average participants empty the bag or filter in their vacuum less than once a week. The mode response was also 5; 23 participants (32.4%) indicated that they empty the bag or filter in their vacuum less than once a week. Seventeen participants (23.9%) indicated 'N/A' as their response. Eight participants (11.3%) indicated that they empty the bag or filter in their vacuum once a week, and 6 participants (8.5%) indicated that they empty the bag or filter in their vacuum twice a week. Just 2 participants (2.8%) indicated that they empty the bag or filter in their vacuum once a day.

For the question, 'How many years have you lived in your current home?', 59 out of 71 participants provided a response, for a calculated response rate of 83.1%. The mean response was 3, indicating that on average, participants have been living in their current home for 6-10 years. The mode response was 2; 23 participants (32.4%) indicated that they have been living in their current home for 1-5 years. Twelve participants (16.9%) indicated that they have been living in the current home for 11-20 years. Eleven participants (15.5%) indicated that they have been living in their current home for 6-10 years. Ten participants (14.1%) indicated that they have been living in

their current home for more than 20 years. Finally, just 3 participants (4.2%) indicated that they have been living in their current home for less than 1 year.

For the question, ‘Do you own or rent your home?’, 64 out of 71 participants provided a response for a calculated response rate of 90.14%. The mean response was 2, indicating that on average, participants rent their home. The mode response was also 2; 36 participants (50.7%) rent their home. Twenty-five participants (36.6%) own their home. Two participants (2.8%) indicated that they are building superintendents.

For the question, ‘How many individuals live in your home, including yourself?’, 66 out of 71 participants provided a response, for a calculated response rate of 92.96%. The mean response was 3, indicating that on average, 3 people live in the participants’ homes. The mode response was 2; 23 participants (32.4%) indicated that there are 2 people living in their home. Thirteen participants (18.3%) indicated that there are 4 people living in their home. Twelve participants (16.9%) indicated that there are 3 people living in their home. Nine participants (12.7%) indicated that there is just 1 person in their home. Five participants (7%) indicated that there are 5 people living in their home.

For the question, ‘Are there any children living in your home?’, 67 out of 71 participants provided an answer, for a calculated response rate of 94.37%. The mean response was 2, indicating that on average, participants do not have children living in their home. The mode response was also 2; 44 participants (62%) indicated that they do not have children living in their home. Twenty-three participants (32.4%) indicated that they do have children living in their home.

For the question, ‘Do you or someone you live with suffer from asthma?’, 70 out of 71 participants provided an answer, for a calculated response rate of 98.60%. The mean response was 2, indicating that on average, participants do not suffer from asthma and do not live with someone who suffers from asthma. The mode response

was also 2; 59 participants (83.1%) indicated that they do not suffer from asthma and they don't live with someone who suffers from asthma. Eleven participants (15.5%) indicated that they suffer from asthma, or someone they live with suffers from asthma.

For the question, 'Do you have a carbon monoxide detector in your home?', 68 out of 71 participants provided a response, for a calculated response rate of 95.77%. The mean response was 1, indicating that on average, participants do have a carbon monoxide detector in their home. The mode response was also 1; 57 participants (80.3%) indicated that they do have a carbon monoxide detector in their home. Ten participants (14.1%) indicated that they do not have a carbon monoxide detector in their home. Lastly, 1 participant (1.4%) doesn't know if there is a carbon monoxide detector in their home.

For the question, 'Is there any peeling or chipping paint inside your home?', 69 out of 71 participants provided an answer, for a calculated response rate of 97.18%. The mean response was 2, indicating that on average, participants do not have peeling or chipping paint in their home. The mode response was also '2'; 64 participants (90.1%) do not have peeling or chipping paint inside their home. Five participants (7%) indicated that they do have peeling or chipping paint inside their home.

For the question, 'Does anyone, including visitors, smoke inside your home?', 70 out of 71 participants provided an answer, for a calculated response rate of 98.59%. The mean response was 2, indicating that on average, participants do not have anyone smoking inside their home. The mode response was also 2; 59 participants (83.1%) indicated that no one smokes inside their home. Eleven participants (15.5%) indicated that someone smokes inside their home.

For the question, 'Do you have people take off their shoes before entering your home?', 65 out of 71 participants provided a response, for a calculated response rate of

91.55%. The mean response was 2, indicating that on average, participants do not have people take off their shoes before entering their home. The mode response was also 2; 41 participants (57.7%) indicated that they do not have people take off their shoes before entering their home. Nineteen participants (26.8%) indicated that they do have people take off their shoes before entering their home. Lastly, 5 participants (91.5%) indicated that they sometimes have people take off their shoes before entering their home.

For the question, ‘Do you know what the humidity level inside your home is?’, 63 out of 71 participants provided a response, for a calculated response rate of 88.73%. The mean response was 2, indicating that on average, participants do not know the humidity level inside their home. The mode response was also 2; 55 participants (77.5%) indicated that they do not know the humidity level inside their home. Seven participants (9.9%) indicated that they do know the humidity level inside their home. One participant (1.4%) indicated the humidity level to be ‘Dry, due to extreme heat in the winter.’

For the question, ‘Do you have any pets in your home?’, 65 out of 71 participants provided a response, for a calculated response rate of 91.55%. The mean response was 2, indicating that on average, participants do not have pets in their home. The mode answer was also 2; 47 participants (66.2%) indicated that they do not have pets in their home. Eighteen participants (25.4%) indicated that they do have pets in their home.

For the question, ‘If [your answer to the previous question was] yes, where are they allowed?’, 16 out of the 18 participants who indicated on that they had a pet in their home provided a response, for a calculated response rate of 88.89%. The mean response was 2, indicating that on average, the participants with pets in the home

provided pets with limited access to their home- and did not allow them in bedrooms. The mode response was 1; 9 participants (12.7%) with pets in the home indicated that their pets are allowed everywhere in their home. Three participants (4.2%) with pets indicated that pets are given limited access to their home, and are not allowed in the bedroom. Three participants (4.2%) indicated that pets are given limited access to their home and did not specify whether or not the pets are allowed in the bedrooms. One participant (1.4%) indicated that their pets are given limited access to the home- including the bedrooms.

For the question, ‘Does your vacuum have a HEPA (high efficiency particulate air) filter?’, 59 out of 71 participants provided a response, for a calculated response rate of 83.1%. The mean response was 3, indicating that on average, participants responded ‘N/A’. The mode response was 2; 18 participants (25.4%) indicated that they do not have a HEPA filter in their vacuum. Seventeen participants (23.9%) indicated that they do have a HEPA filter in their vacuum. Ten participants (14.1%) indicated their answer as ‘N/A’. Eight participants (11.3%) indicated that they don’t know if their vacuum has a HEPA filter. Three participants (11.3%) indicated that they don’t own a vacuum. Two participants (2.8%) responded with a question mark (?), which likely indicates that they don’t know if their vacuum has a HEPA filter. One participant (1.4%) indicated ‘probably yes’.

For the question, ‘What types of cleaning products do you use on a regular basis?’, 52 out of 71 participants provided a response, for a calculated response rate of 73.24%. The mean response was 4, indicating that on average, participants use a combination of natural/green and commercial cleaning products. The mode response was 2; 20 participants (28.2%) indicated that they use commercial cleaners. Sixteen participants (22.5%) indicated that they use bleach and other commercial cleaners.

Five participants (7.0%) indicated that they use Clorox/bleach. Four participants (5.6%) indicated that they use natural/green cleaners; 4 participants (5.6%) indicated that they use natural/green cleaners and bleach; 2 participants (2.8%) indicated that they use natural/green and commercial cleaner combination. Lastly, 1 participant (1.4%) uses bleach, natural, and commercial cleaners.

For the question, ‘Do you generally buy cleaning products at the store, or do you make them yourself?’, 64 out of 71 participants provided an answer, for a calculated response rate of 90.14%. The mean response was 1, indicating that on average, participants buy cleaning products at the store. The mode response was also 1; 62 participants (87.3) indicated that they buy cleaning products at the store. Two participants (2.8%) indicated that they buy some cleaning products at the store, and mix some cleaning products themselves.

For the question ‘Have you ever tried using a homemade cleaning product when you ran out of a store-bought cleaner?’, 65 out of 71 participants indicated a response, for a calculated response rate of 91.55%. The mean response was 2, indicating that on average, participants had not tried using a homemade cleaning product after running out of a store-bought cleaner. The mode response was also 2; 51 participants (71.8%) indicated that they had not tried using a homemade cleaner after running out of a store bought cleaner. Fourteen participants (19.7%) indicated that they have tried using a homemade cleaner after running out of a store-bought cleaner.

For the question, ‘How do you determine the correct amount of cleaning product to use?’, 42 out of 71 participants provided a response, for a calculated response rate of 59.15%. The mean response was 3, indicating that on average, the amount of cleaning product participants use depends on what they are cleaning. The mode response was 1; 15 participants (21.1%) use the directions as a guide to

determine the correct amount of cleaner to use. Ten participants (14.1%) indicated that they estimate the correct amount of cleaner to use; 5 participants (7.0%) measure the cleaner to get the correct amount; 4 participants (5.6%) indicated that they determine correct amount of cleaner by what they are cleaning; and 2 participants (2.8%) fell into each of the following categories for determining the correct amount of cleaner: 'From experience', 'Don't know', 'Just use it', and 'N/A'.

For the question, 'Would you consider making your own cleaning products?', 60 out of 71 participants provided a response, for a calculated response rate of 84.51%. The mean response was 2, indicating that on average, participants would not consider making their own cleaning products. The mode response was also 2, 37 participants (52.1%) indicated that they would not consider making their own cleaning products. Nineteen participants (26.8%) indicated that they would consider making their own cleaning products; 3 participants (4.2%) indicated that they might consider making their own cleaning product; 1 participant (1.4%) indicated 'N/A'.

For the question 'Why or why not [consider making your own cleaning products?]', 31 out of 71 participants provided a response, for a calculated response rate of 43.66%. The mean response was 7, indicating that on average, participants would not consider making their own cleaning products because they are too busy. The mode response was 10; 9 participants (12.7%) indicated that they would consider making their own cleaning products for a variety of reasons (categorized as 'other'). Five participants (7.0%) indicated that they would consider making their own cleaning products if they knew how to and had the proper tools. Two participants (2.8%) indicated that they would consider making their own cleaning products if it were cost effective. One participant (1.4%) indicated that making their own cleaning products would be an option if they had the time. Seven participants (9.9%) indicated that they

would not consider making their own cleaning products because it might be dangerous. Two participants (2.8%) indicated that they would not consider making their own cleaning products because they don't have the time. Two participants (2.8%) indicated that they would not consider making their own cleaning products for a variety of reasons (categorized as 'other'). One participant (1.8%) would not consider making their own cleaning products because they don't know how to. Finally, 1 participant (1.8%) would not consider making their own cleaning products it would be a hassle.

For the question, 'Do you or anyone you live with experience allergic reactions to cleaning products?', 64 out of 71 participants provided a response, for a calculated response rate of 90.14%. The mean response was 2, indicating that on average, participants themselves, and no one they live with, experience allergic reactions to cleaning products. The mode response was also 2; 54 participants (76.1%) indicated that they do not experience allergic reactions to cleaning products, and neither does anyone that they live with. Ten participants (14.1%) indicated that they experience allergic reactions to cleaning products, or someone they live with experiences allergic reactions to cleaning products.

For the question, 'Do you ever mix cleaning products together?', 63 out of 71 participants provided a response, for a calculated response rate of 88.73%. The mean response was 2, indicating that on average, participants do not mix cleaning products together. The mode response was also 2; 49 participants (69.0%) indicated that they do not mix cleaning products together. Fourteen participants (19.7%) indicated that they do mix cleaning products together.

For the question 'If yes [you do mix cleaning products together], why do you do this?', 10 out of 14 participants who had indicated on the previous part of the

question that they do mix cleaning products together provided a response, for a calculated response rate of 71.43%. The mean response was 2, indicating that on average- participants who mix cleaning products together do so when they run out or run low of a product. The mode response was 1; 6 (8.5%) participants who mix cleaning products together do so to achieve better results. Lastly, one participant (1.4%) mixes cleaning products together to try something new.

For the question ‘Where do you keep your cleaning products?’, 62 out of 71 participants provided a response, for a calculated response rate of 87.32%. The mean response was 3, indicating that on average, participants keep their cleaning products in their basement or cellar. The mode response was 4; 24 participants (38.7%) indicated that they keep their cleaning products in a storage closet.

For the question ‘Do you think that homemade cleaning products would be as effective as the cleaners you buy at the store?’, 56 out of 71 participants provided a response, for a calculated response rate of 78.87%. The mode response was 2, 19 participants (26.8%) don’t think that homemade cleaning products would be as effective as the cleaners they can buy at the store. However, it is notable that 16 participants (22.5%) believe that homemade cleaners can be as effective as store-bought cleaners.

For the question ‘Why or why not? [Do you think that homemade cleaning products would be as effective as the cleaners you buy at the store?]’, 16 out of the 56 participants who provided a response to the first part of this question indicated why or why not they believe household cleaning products would be as effective as the cleaning products they can buy in the store, for a calculated response rate of 28.57%. The mode response was 4, 5 participants (31.2%) believe that household cleaning products would not be as effective as the products they can buy in the store because

they don't know how to make cleaning products at home, or they don't have the proper ingredients to make the cleaning products themselves. However, it is notable that 4 participants (5.6%) believe that they could make effective cleaning products at home if they had the proper ingredients and instructions.

For the question 'Would you be willing to try cleaning products that were advertised as 'green' or 'environmentally friendly'?', 54 out of 71 participants provided a response, for a calculated response rate of 76.06%. The mode response was 1; 44 participants (62.0%) indicated that they would be willing to try cleaning products that are advertised as 'green' or 'environmentally friendly'. Only 5 participants (7.0%) indicated that they would not be willing to try such products, and 4 participants (5.6%) indicated that they might be willing to try such products.

For the question 'Why or why not [would you be willing to try cleaning products that are advertised as 'green' or 'environmentally friendly?']', 25 out of the 54 participants who provided a response to the first part of this question also provided an explanation in the second part of the question, for a calculated response rate of 46.30%. The mode response was 1; 9 participants (12.7%) indicated that they would be willing to try cleaning products that are advertised as 'green' or 'environmentally friendly' because those products would be good for the environment. Five participants (7.0%) indicated that they would be willing to try such products because they enjoy trying green products. Three participants (4.2%) indicated that they would not be willing to try such products because they think they are too expensive.

For the question 'Are 'green' or 'environmentally friendly' cleaning products available in your local store?', 55 out of 71 participants provided a response, for a calculated response rate of 77.46%. The mode response was 1; 30 participants (42.3%) indicated that 'green' or 'environmentally friendly' cleaning products are available in their local store. Fifteen participants (21.1%) indicated that such products are not

available in their local store, 6 participants (8.5%) are not sure if such products are available, 2 participants (2.8%) indicated that they have never checked to see if such products are available, and interestingly, 1 participant (1.4%) responded that 'green' or 'environmentally responsible' cleaning products are 'sometimes' available in their local store. Lastly one participant (1.4%) indicated 'N/A'.

For the question 'If you were given the ingredients for making your own household cleaners and instructions and supplies necessary for doing so, would you be willing to give homemade cleaners a try?', 53 out of 71 participants provided a response, for a calculated response rate of 74.65%. The mode response was 1; 38 participants (53.5%) indicated that under such circumstances, they would be willing to try homemade cleaning products. Twelve participants (16.9%) indicated that they would not be willing to try homemade cleaning products- even if they were given the supplies and instructions necessary to do so. Lastly, 3 participants (4.2%) indicated that they might be interested in trying homemade cleaning products given these circumstances.

For the question 'Why or why not would you be willing to give homemade cleaners a try [if you were given the ingredients instructions and supplies necessary for doing so]?', 17 out of the 53 participants who provided a response to the first part of this question also provided an explanation in the second part of the question, for a calculated response rate of 32.08%. The mode responses were 'Yes- to try out the homemade cleaners' and 'Yes- Because it's better for the environment'- with 5 participants (7.0%) providing each of those responses. Three participants (4.2%) responded 'Yes- Because homemade cleaners would be less expensive'. Two participants (2.8%) responded 'No- Doing so would be more time consuming', and 1 participant (1.4%) responded 'No- I don't like mixing chemicals'. Lastly, 1 participant (1.4%) responded 'No- It might be harmful'.

For the statement ‘I open the windows I my home when cleaning’, 68 out of 71 participants provided a response, for a calculated response rate of 95.77%. The mode response was 4; 35 participants (49.3%) indicated that they ‘agree’ with this statement. Eighteen participants (25.4%) indicated that they ‘strongly agree’ with this statement. Six participants (8.5%) indicated that they are ‘Neutral/Not Sure’, 4 participants (5.6%) indicated that they ‘Disagree’ with the statement, and lastly 5 participants (7.0%) indicated that they ‘Strongly Disagree’.

For the statement ‘‘Green’ or ‘environmentally friendly’ cleaning products are more expensive than regular cleaning products’, 65 out of 71 participants provided a response, for a calculated response rate of 91.55%. The mode response was 3; 30 participants (42.3%) indicated that they are ‘Neutral/Not Sure’. Twenty-one participants (29.6%) indicated that they ‘Agree’ with this statement. Eight participants (11.3%) indicated that they ‘Strongly Agree’. Four participants (5.6%) indicated that they ‘Disagree’ with the statement, and lastly 2 participants (2.8%) indicated that they ‘Strongly Disagree’.

For the statement ‘I wear protective gear when cleaning’, 67 out of 71 participants provided a response, for a calculated response rate of 94.37%. The mode response was 4; 33 participants (46.5%) indicated that they ‘Agree’ with this statement. Thirteen participants (18.3%) indicated that they ‘Strongly Agree’. Five participants (7.0%) indicated that they are ‘Neutral/Not Sure’, 8 participants (11.3%) indicated that they ‘Disagree’ with the statement, and lastly 8 participants (11.3%) indicated that they ‘Strongly Disagree’.

For the statement ‘I associate a certain smell or aroma with cleanliness’, 66 out of 71 participants provided a response, for a calculated response rate of 92.96%. The mode response was 4; 35 participants (49.3%) indicated that they ‘Agree’ with this statement. Thirteen participants (18.3%) indicated that they ‘Strongly Agree’ with this

statement. Four participants (5.6%) indicated that they are 'Neutral/Not Sure', 7 participants (9.9%) indicated that they 'Disagree' with the statement, and lastly 7 participants (9.9%) indicated that they 'Strongly Disagree'.

For the statement 'Household cleaning products are expensive', 65 out of 71 participants provided a response, for a calculated response rate of 91.55%. The mode response was 4; 33 participants (46.5%) indicated that they 'Agree' with the statement. Six participants (8.5%) indicated that they 'Strongly Agree'. Twelve participants (16.9%) indicated that they are 'Neutral/Not Sure', 11 participants (15.5%) indicated that they 'Disagree' with the statement, and lastly 3 participants (4.2%) indicated that they 'Strongly Disagree'.

For the statement 'After I clean, I take out the garbage with the discarded cleaning supplies', 65 out of 71 participants provided a response, for a calculated response rate of 91.55%. The mode response was 4; 35 participants (49.3%) indicated that they 'Agree' with the statement. Seventeen participants (23.9%) indicated that they 'Strongly Agree' with the statement. One participant (1.4%) entered an invalid response. Two participants (2.8%) indicated that they are 'Neutral/Not Sure', 8 participants (11.3%) indicated that they 'Disagree' with the statement, and lastly, 2 participants (2.8%) indicated that they 'Strongly Disagree'.

For the statement 'I use the same kinds of cleaning products on a regular basis', 65 out of 71 participants provided a response, for a calculated response rate of 91.55%. The mode response was 4; 51 participants (71.8%) indicated that they 'Agree' with the statement. Eight participants (11.3%) indicated that they 'Strongly Agree'. Two participants (2.8%) indicated that they are 'Neutral/Not Sure', 1 participant (1.4%) indicated 'Disagree', and lastly 3 participants (4.2%) indicated that they 'Strongly Disagree'.

For the statement ‘I would try a new cleaning product if I knew that it would be as effective as a product I’m familiar with’, 64 out of 71 participants provided a response, for a calculated response rate of 90.14%. The mode response was 4; 44 participants (62.0%) indicated that they ‘Agree’ with the statement. Sixteen participants (22.5%) indicated that they ‘Strongly Agree’. Two participants (2.8%) indicated that they are ‘Neutral/Not Sure’, 1 participant (1.4%) indicated ‘Disagree’, and lastly, 1 participant (1.4%) indicated ‘Strongly Disagree’.

For the statement, ‘Making my own cleaning products would be too complicated. I’d rather use store bought products’, 63 out of 71 participants provided a response, for a calculated response rate of 88.73%. The mode response was 4; 23 participants (32.4%) indicated that they ‘Agree’ with the statement. Seven participants (9.9%) indicated that they ‘Strongly Agree’. Fifteen participants (21.1%) indicated that they are ‘Neutral/Not Sure’. Fourteen participants (19.7%) indicated that they ‘Disagree’ with the statement, and lastly 4 participants (5.6%) indicated that they ‘Strongly Disagree’.

For the statement ‘I don’t know how to make my own cleaning supplies’, 64 out of 71 participants provided a response, for a calculated response rate of 90.14%. The mode response was 4; 34 participants (47.9%) indicated that they ‘Agree’ with the statement. Fourteen participants (19.7%) indicated that they ‘Strongly Agree’ with the statement. Five participants (7.0%) indicated that they are ‘Neutral/Not Sure’. One participant (1.4%) entered an invalid response. Five participants (7.0%) indicated that they ‘Disagree’ with the statement, and lastly, 5 participants (7.0%) indicated that they ‘Strongly Disagree’.

For the statement ‘I am concerned about the safety of the cleaning supplies I use in my home’, 65 out of 71 participants provided a response, for a calculated response rate of 91.55%. The mode response was 4; 34 participants (47.9%) indicated

that they 'Agree' with the statement. Sixteen participants (22.5%) indicated that they 'Strongly Agree' with the statement. Five participants (7.0%) indicated that they are 'Neutral/Not Sure'. Five participants (7.0%) indicated that they 'Disagree' with the statement, and lastly 5 participants (7.0%) indicated that they 'Strongly Disagree'.

Section III: Analyses for Part 3 of the survey

The statement ‘Lead paint is more likely to be found in newer homes than in older homes’ is false. A total of 66 out of 71 participants provided a response to this statement, for a calculated response rate of 92.96%. Sixty-one participants (85.9%) provided a correct response of ‘False’. Five participants (7.0%) provided an incorrect response of ‘True’.

The statement ‘High lead in the body can affect a child’s ability to learn’ is true. A total of 68 out of 71 participants provided a response to this question, for a calculated response rate of 95.77%. Sixty-seven participants (94.4%) provided a correct response to this statement. One participant (1.4%) provided an incorrect response to this statement.

The statement ‘Most children have symptoms right away if they have an elevated blood lead level’ is false. A total of 64 out of 71 participants provided a response to this statement, for a calculated response rate of 90.14%. Twenty-nine (40.8%) participants provided a correct response ‘False’. Thirty-five (49.3%) participants provided an incorrect response of ‘True’. It is important to note that for this particular question, a higher percentage of participants provided an incorrect response than a correct response. This is an indication of the need to incorporate information on this particular topic into a green cleaning educational program.

The statement ‘Living in a building during renovation/remodeling can increase a child’s exposure to lead’ is true. A total of 67 out of 71 participants provided a response to this statement, for a calculated response rate of 94.37%. Fifty-nine participants (83.1%) provided a correct response of ‘True’. Eight participants (11.3%) provided an incorrect response of ‘False’.

The statement ‘Washing a child’s hands often helps prevent lead poisoning’ is true. A total of 66 out of 71 participants provided a response to this statement, for a calculated response rate of 92.96%. Forty-five participants (63.4%) provided a correct response of ‘True’. Twenty-one participants (29.6%) provided an incorrect response of ‘False’.

The statement ‘Cleaning a home with soap and water decreases the lead in the home more than dusting or sweeping’ is true. A total of 62 out of 71 participants provided a response to this question, for a calculated response rate of 87.32%. Twenty-five participants (35.2%) provided a correct response of ‘True’. Thirty-seven participants (52.1%) provided an incorrect response of ‘False’. It is important to note that for this particular question, a higher percentage of respondents provided an incorrect response than a correct response. This is an indication of the need to incorporate information on this particular topic into a green cleaning educational program.

The statement ‘One way for children to get lead poisoning is by having lead dust on their hands and then putting their hands in their mouth’ is true. A total of 69 out of 71 participants provided a response to this question, for calculated response rate of 97.18%. Sixty-three participants (88.7%) provided a correct response of ‘True’. Three participants (4.2%) provided an incorrect response of ‘False’.

The statement ‘Lead in water can be removed by boiling’ is false. A total of 58 out of 71 participants provided a response to this statement, for a calculated response rate of 81.69%. Forty-four participants (62.0%) provided a correct response of ‘False’. Fourteen participants (19.7%) provided an incorrect response of ‘True’.

The statement 'Most cases of childhood lead poisoning are caused by drinking water that contains lead' is false. A total of 57 out of 71 participants provided a response, for a calculated response rate of 80.28%. Thirty-nine participants (54.9%) provided a correct response of 'False'. Eighteen participants (25.4%) provided an incorrect response of 'True'.

The statement 'Warm tap water usually contains less lead than cold tap water' is false. A total of 57 out of 71 participants provided a response to this statement, for a calculated response rate of 80.28%. Thirty-seven participants (52.1%) provided a correct response of 'False'. Twenty participants (28.2%) provided an incorrect response of 'True'.

The statement 'Some dishes and pottery are not safe to use in cooking or for eating because they contain lead' is true. A total of 57 out of 71 participants provided a response to this statement, for a calculated response rate of 80.28%. Forty-seven participants (66.2%) provided a correct response of 'True'. Ten participants (14.1%) provided an incorrect response of 'False'.

The statement 'Most children get lead poisoning by breathing in lead, rather than by eating or swallowing lead' is false. A total of 55 out of 71 participants provided a response to this statement, for a calculated response rate of 77.46%. Thirty-two participants (45.1%) provided a correct response of 'True'. Twenty-three participants (32.4%) provided an incorrect response of 'False'.

The statement 'The human body needs a small amount of lead for good nutrition' is false. A total of 60 out of 71 participants provided a response to this statement, for a calculated response rate of 84.51%. Forty-eight participants (67.6%) provided a correct response of 'False'. Twelve participants (16.9%) provided an incorrect response of 'True'.

The statement ‘A balanced diet, with a good amount of iron and calcium that does not contain too many fatty foods, decreases lead absorption by the body’ is true. A total of 55 out of 71 participants provided a response to this statement, for a calculated response rate of 77.46%. Twenty-eight participants (39.4%) provided a correct response of ‘True’. Twenty-seven participants (38.0%) provided an incorrect response of ‘False’. It is important to note that for this particular question, the responses were split almost evenly. Although a higher percentage of participants provided a correct response than an incorrect response, the difference is just 1.4%. This is an indication of the need to incorporate information on this particular topic into a green cleaning educational program.

The statement ‘You cannot see, smell, or taste many indoor pollutants’ is true. A total of 64 out of 71 participants provided a response to this statement, for a calculated response rate of 90.14%. Forty-nine participants (69.0%) provided a correct response of ‘True’. Fifteen participants (21.1%) provided an incorrect response of ‘False’.

The statement ‘You cannot do anything to prevent indoor air quality problems’ is false. A total of 61 out of 71 participants provided a response to this statement, for a calculated response rate of 85.91%. Fifty-four participants (76.1%) provided a correct response of ‘False’. Seven participants (9.9%) provided an incorrect response of ‘True’.

The statement ‘Indoor air pollutants can be either natural or artificial’ is true. A total of 59 out of 71 participants provided a response to this statement, for a calculated response rate of 83.10%. Fifty-four participants (76.1%) provided a correct response of ‘True’. Five participants (7.0%) provided an incorrect response of ‘False’.

The statement ‘People spend as much as 90% of their time indoors’ is true. A total of 62 out of 71 participants provided a response to this statement, for a calculated

response rate of 87.32%. Forty-three participants (60.6%) provided a correct response of 'True'. Nineteen participants (26.8%) provided an incorrect response of 'False'.

The statement 'Opening a window will always solve an indoor air pollution problem' is false. A total of 61 out of 71 participants provided a response to this statement, for a calculated response rate of 85.92%. Forty-one participants (57.7%) provided a correct response of 'False'. Twenty participants (28.2%) provided an incorrect response of 'True'.

The statement 'Smoking is only dangerous to the person who is smoking' is false. A total of 64 out of 71 participants provided a response to this statement, for a calculated response rate of 90.14%. Sixty-two participants (87.3%) provided a correct response of 'False'. Two participants (2.8%) provided an incorrect response of 'True'.

The statement 'Pesticides only hurt the pests they were designed to kill' is false. A total of 63 out of 71 participants provided a response to this statement, for a calculated response rate of 88.73%. Sixty participants (84.5%) provided a correct response of 'False'. Three participants (4.2%) provided an incorrect response of 'True'.

Section IV: Regression Analyses

A linear regression analysis was conducted to observe willingness to try a new cleaning product that is viewed as effective as a familiar product. Results are displayed in Table 4.1 below.

TABLE 4.1 Coefficients- Gender of Participant

Model	Unstandardized Coefficients		Standardized	t	Sig.
	B	Std. Error	Coefficients		
1 (Constant)	4.993	1.073		4.651	.000
Age of Participant	-.177	.131	-.260	-1.354	.187
Highest Level of Education	-.126	.091	-.325	-1.388	.176
Participant has received					
Household Annual Income	.027	.045	.134	.599	.554
Gender of Participant	.545	.255	.375	2.137	.042
Marital Status of Participant	.038	.094	.084	.397	.694
Race of Participant	-.020	.110	-.031	-.183	.856
Do you own or rent your home?	-.276	.253	-.214	-1.091	.285

a. Dependent Variable: I would try a new cleaning product if I knew that it would be as effective as a product I'm familiar with.

When controlling for effects of age, education, income gender, marital status, race, and tenure status, gender is the only significant independent variable ($t=2.137$; $p=.042$; $r^2=.256$). The positive result indicates that women in this sample are more likely than men to be willing to try a new cleaning product.

A linear regression analysis was conducted to observe willingness to make a cleaning product rather than use a store bought cleaning product. Results are displayed in Table 4.2 below.

TABLE 4.2 Coefficients- Age of Participant

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	7.092	1.693		4.188	.000
Age of Participant	-.535	.211	-.470	-2.536	.017
Highest Level of Education	-.086	.141	-.136	-.612	.545
Household Annual Income	-.025	.073	-.074	-.340	.736
Gender of Participant	-.672	.405	-.283	-1.662	.108
Marital Status of Participant	.043	.153	.056	.281	.781
Race of Participant	.166	.176	.155	.944	.353
Do you own or rent your home?	-.333	.401	-.159	-.830	.413

a. Dependent Variable: Making my own cleaning products would be too complicated. I'd rather use store bought products.

When the dependent variable was the response to “Making my own cleaning products would be too complicated. I'd rather use store bought products,” the only significant independent variable was age ($t=-2.536$; $p=.017$; $r^2=.282$). The negative value of the t-statistic indicates that the older the respondent, the less likely he or she was to agree with the statement. No significant results were observed when a regression analysis was conducted using this same list of independent variables and the dependent variable concerned responses to safety concerns about cleaning products.

These results indicate that gender and age may be important characteristics to consider when designing education programs about green cleaning issues. Women are more likely than men to change cleaning products, and older people are less likely than young people to consider making their own cleaning products. Hypothesized results about household income were not observed. This may be due to limitations of the sample.

TABLE 4.3

Household Annual Income

N	Valid	61
	Missing	10
Mean		4.97
Median		4.00
Mode		3
Std. Deviation		3.220
Sum		303

Table 4.3 summarizes the income distribution of survey participants. The mean indicates a range of \$30,000 to \$39,999. The standard deviation of 3.220 indicates that incomes in the sample are clustered closely to the mean. There is likely little statistical difference in the incomes of participants in this sample, so that income effects could not be observed.

Chapter V

CONCLUSIONS

This thesis examined the cleaning and household maintenance habits of individuals of low to lower-middle socio-economic status, their perceptions of cleanliness inside their homes, their exposure to green cleaning, and their willingness to try green cleaning products and techniques. Examining these habits and perceptions was in an effort to form an understanding of where there are common mistakes and misconceptions related to safe household cleaning techniques and indoor air quality.

Summary of Findings:

Hypothesis H1: Household cleaning and maintenance habits will differ based on the demographic characteristics of the surveyed individuals.

The results indicate that household cleaning and maintenance habits differ significantly in terms of gender and age. The women surveyed in this study are more likely to change cleaning products. The older individuals surveyed were less likely than the younger individuals to consider making their own cleaning products.

Differences due to household income were not observed. This is likely due to a small variance in the incomes of survey respondents. To observe whether such a difference exists, future researchers should survey people of different income groups.

Hypotheses H2 and H3: Perceptions of, and exposure to green cleaning will differ based on the demographic characteristics of the surveyed individuals.

Significant differences were observed with regard to age and gender, as stated above. This observation when designing and implementing green education program with more sensitivity to the age and gender of the students.

Hypothesis H4: Willingness to try green cleaning will differ based on the demographic characteristics of the surveyed individuals.

The results indicate that gender is the only significant independent variable in terms of willingness to try a green cleaning product. The women surveyed in this study are more likely than the men to try a green cleaning product that they know would be as effective as a cleaning product with which they are already familiar. Additionally, the results suggest that older individuals who were surveyed are less likely to consider making their own cleaning products as substitutes for the cleaning products they already use.

Practical Implications

The findings of this research have practical implications for individuals involved in housing education, real estate professionals, facility planners, facility managers, building tenants, and homeowners. Individuals involved in housing education should consider the demographic makeup of their students in order to write and deliver their curricula effectively. Real estate professionals, facility planners and facility managers should consider the habits and perceptions of the individuals living in their facilities when designing, developing, and managing their properties. Building tenants and homeowners might find it interesting to test their knowledge of green cleaning and lead-safe cleaning practices. They might then consider making changes to their cleaning habits in order to improve the safety of their homes. They might also seek out green cleaning education courses in order to gain more knowledge and understanding of the benefits of green cleaning, in addition to learning about where to find green cleaning products, and how to make their own cleaning products.

The issue of lead was also examined in the survey and analyses. Technically, lead is a separate issue from green cleaning. However, because of the old age of the housing stock in New York City, lead is a topic of concern to HPD. When the issue of cleaning is discussed, the importance of cleaning that minimizes lead exposure should be addressed.

Limitations of the Study

In a future study of this type, respondents might be selected by the researcher instead of relying on self-selected respondents. This will help ensure that the surveys are answered by an appropriately varied group of individuals. In addition, the questions might be formatted in a manner that is more readily understandable to the respondent, and does not ask for free responses. Instead, supplying a wide range of answers from which to select would likely produce more useful information. This will also streamline the process of calculating and interpreting the results. Additionally, the demographic questions might appear at the end of the survey, rather than at the beginning, so as to minimize the possibility of respondents feeling like the demographic questions were too intrusive, and consequently deciding to not finish the remaining portions of the survey. The survey might also include questions that are similar, but worded slightly differently, in an effort to be sure that respondents understand the question and are providing truthful and consistent answers. This study might have also surveyed individuals before they started a course on green cleaning, and then again afterwards to compare the results. Lastly, the researcher might have been present during the distribution of the surveys in order to answer any questions that participants had regarding the survey. This could potentially increase the response rate.

Directions for Future Research

Results from this analysis suggest that there is a need to incorporate information about the benefits of green cleaning and green cleaning techniques into housing education programs for individuals of low to lower-middle socio-economic status. Future research might pose similar questions to individuals of higher socio-economic status in order to form a basis for comparison. Additionally, to minimize the limitations of such studies, future research designs might include questions regarding the respondents' opinions and understanding of climate change, their recycling efforts inside the home, and their knowledge of the waste management and recycling services offered in their neighborhood.

APPENDIX

Institutional Review Board
Suite 320, East Hill Office Building 395 Pine Tree Road Ithaca,
New York 14850
t. 607.255.5138

f. 607.255.0708 <http://www.irb.cornell.edu>

**Protocol
ID# 08-11-
032**

To: Jessica Mooney
From: Susan R. Lewis, IRB Administrator

Date of December 3, 2008 *(If you are using a consent form, enter this date at the bottom of it now.)*
exemption:

Project(s):

Green Cleaning and Maintenance in Low-Income Housing

A member of the Office of Research Integrity and Assurance (ORIA) has reviewed the above referenced project and it is Exempt from the Federal Regulations for the Protection of Human Subjects (45 CFR 46). As detailed in the application you submitted, the involvement of human subjects in this research study is ***strictly limited*** to one or more of the exempted categories listed on the attached Citation sheet.

Exemption does not absolve the investigator from ensuring that the welfare of the research subjects is protected and that methods used and information provided to gain subject consent are appropriate to the activity. It is your responsibility as a researcher to familiarize yourself with and conduct the research in accordance with the ethical standards of the *Belmont Report. Belmont Report.*
<http://ohrp.osophs.dhhs.gov/humansubjects/guidance/belmont.htm>

You must immediately notify the IRB if any changes or modifications are made in the study's design or procedures that do not fall within one of the categories exempted from the regulations. Any such changes or modifications must be reviewed and approved by the IRB *prior* to their implementation.

You are not required to submit progress reports or requests for continuing review/approval to the IRB, unless you modify your study protocol.

Attachment: Exemption Citation

c: Joseph Laquatra

Exemption Citation
Jessica Mooney Green Cleaning and Maintenance in
Low-Income Housing or:

Protocol ID# 08-11-032 12-3-
Issued on: 2008

Cornell University 395
Pine Tree Rd., Ste. 320
Ithaca, NY 14850
Telephone: 607 255-5138

Office of Research Integrity and Assurance

Fax: 607 255-0758

45 CFR 46.101 (b) Unless otherwise required by [DHHS] department or agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:

___ (1) Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as
(i) research on regular and special education instructional strategies, or
(ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

X (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey

procedures, interview procedures or observation of public behavior, unless:

(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and
(ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employ-ability, or reputation.

___ (3) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior that is not exempt under paragraph (b)(2) of this section, if:
(i) the human subjects are elected or appointed public officials or candidates for public office; or
(ii) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter.

___ (4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

(5) Research and demonstration projects which are conducted by or subject to the approval of [DHHS] department or agency heads, and which are designed to study, evaluate, or otherwise examine:

(i) Public benefit or service programs;
(ii) procedures for obtaining benefits or services under those programs;

(iii) possible changes in or alternatives to those programs or procedures; or

(iv) possible changes in methods or levels of payment for benefits or services under those programs.

____ (6) Taste and food quality evaluation and consumer acceptance studies,
(i) if wholesome foods without additives are consumed or
(ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

Survey Section	Section Components
Background Information	<p>7 demographic questions</p> <p>2 questions regarding the participants' homes</p>
Part 1	<p>32 opened-ended questions (including follow-up portions of 7 questions) regarding the participant's household, household maintenance habits, thoughts regarding green household cleaning products. One chart that asked participants to specify how often they perform 12 household maintenance tasks.</p>
Part 2	<p>11 statements regarding household tasks and green cleaning. Participants were asked to indicate -using a Likert scale- how strongly they agreed or disagreed with each statement.</p>
Part 3	<p>21 statements regarding a variety of household cleaning and maintenance issues- participants answered as True or False</p>
Part 4	<p>2 open-ended questions asking the participants why they decided to take a course at HPD and why they agreed to answer the survey (not analyzed for research).</p>

SURVEY

This survey was written by a graduate student at Cornell University. It is intended for research purposes only. You are not required to fill out this survey. You may answer all, some, or none of the questions. Your responses will be kept confidential.

Background Information

Date:

Gender (please circle answer):

Male

Female

Age (please circle answer):

18-21

22-25

26-30

31-40

41-50

51-60

61 or over

Highest level of education you have received (please circle answer):

Less than High School

High School/GED

Some College

2-Year College Degree (Associates)

4-Year College Degree (BA, BS)

Master's Degree

Doctoral Degree

Professional Degree (JD, MD)

Household Annual Income (please circle answer):

Less than \$10,000

\$10,000 - \$19,999

\$20,000 - \$29,999

\$30,000 - \$39,999

\$40,000 - \$49,999

\$50,000 - \$59,999

\$60,000 - \$69,999

\$70,000 - \$79,999

\$80,000 - \$89,999

\$90,000 - \$99,999

\$100,000 - \$149,999

More than \$150,000

Marital Status (please circle answer):

Single, Never Married

Married

Co-Habiting

Separated

Divorced

Widowed

Race (please circle answer):

White

White/Non-Hispanic

African-American

Hispanic

Asian-Pacific Islander

Native American

What type of building do you live in? (please circle answer):

Apartment

Single-Family Detached

Condo

What year was your home built (if known)? (please answer below):

If prior to 1978, have you ever had a lead assessment done in your home? (please answer below):

Part 1

Directions:

Please read each question and write your answer below. Feel free to write as much or as little as you like. You do not have to answer every question, although your feedback is highly appreciated.

1. How many years have you lived in your current home?
2. Do you own or rent your home?
3. How many individuals live in your home, including yourself?
4. Are there any children living in your home?
5. Do you or someone you live with suffer from asthma? If yes, who?
6. Do you have a carbon monoxide detector in your home?
7. Is there any peeling or chipping paint inside your home?
8. Does anyone, including visitors, smoke inside your home?
9. Do you have people take off their shoes before entering your home?

10. Do you know what the humidity level inside your home is?

11. Do you have any pets in your home?
 - 11 a. If yes, where are they allowed inside?

12. Does your vacuum have a HEPA (high efficiency particulate air) filter?

13. Please indicate with an 'x' or check in the chart on the next page how often each task is performed in your home.

	More than once a day	Once a day	Twice a week	Once a week	Less than once a week	N/A
Take out the trash						
Wash dishes						
Vacuum						
Sweep						
Wet mop						
Damp wipe window sills						
Wipe counters						
Dry dust						
Dust with a damp cloth						
Wash the bedding						
Vacuum/Clean Mattresses						
Empty the bag or filter in vacuum						

14. What types of cleaning products do you use on a regular basis?
15. Do you generally buy cleaning products at the store, or do you make them yourself?
16. Have you ever tried using a homemade cleaning product when you ran out of a store bought cleaner?
17. How do you determine the correct amount of cleaning product to use?
18. Would you consider making your own cleaning products? Why or why not?
19. Do you or anyone you live with experience allergic reactions to cleaning products?
20. Do you ever mix cleaning products together? If yes, why do you do this?
21. Where do you keep your cleaning products?
22. Do you think that homemade cleaning products would be as effective as the cleaners you buy at the store? Why or why not?
23. Would you be willing to try cleaning products that were advertised as 'green' or 'environmentally friendly'? Why or why not?

24. Are 'green' or 'environmentally friendly' cleaning products available in your local store?

25. If you were given the ingredients for making your own household cleaners and instructions and supplies necessary for doing so, would you be willing to give homemade cleaners a try? Why or why not?

Please go on to Part 2 on the next page.

Part 2

Directions: Please read each statement and circle a number (1 through 5, on the scale below each question) that best describes your agreement with the statement. You do not have to answer every question, although your feedback is highly appreciated.

I open the windows in my home when cleaning.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree

‘Green’ or ‘environmentally friendly’ cleaning products are more expensive than regular cleaning products.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree

I wear protective gear when cleaning (rubber gloves, face mask).

1	2	3	4	5
Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree

I associate a certain smell or aroma with cleanliness (such as bleach, lemon, or pine).

1	2	3	4	5
Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree

Household cleaning products are expensive.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree

After I clean, I take out the garbage with the discarded cleaning supplies.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree

I use the same kinds of cleaning products on a regular basis.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree

I would try a new cleaning product if I knew that it would be as effective as a product I'm familiar with.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree

Making my own cleaning products would be too complicated, I'd rather use store bought products.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree

I don't know how to make my own cleaning supplies.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree

I am concerned about the safety of the cleaning supplies I use in my home.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral/Not Sure	Agree	Strongly Agree

Part 3

Directions: Please read each statement and indicate a 'T' for statement you believe are true, and an 'F' for statements you believe are false. You do not have to answer every question, although your feedback is highly appreciated.

Lead

1. _____ Lead paint is more likely to be found in newer homes than in older homes.
2. _____ High lead in the body can affect a child's ability to learn.
3. _____ Most children have symptoms right away if they have an elevated blood lead level.
4. _____ Living in a building during renovation/remodeling can increase a child's exposure to lead.
5. _____ Washing a child's hands often, helps prevent lead poisoning.
6. _____ Cleaning a home with soap and water decreases the lead in the home more than dusting or sweeping.
7. _____ One way for children to get lead poisoned is by having lead dust on their hands and then putting their hands in their mouth.
8. _____ Lead in water can be removed by boiling.
9. _____ Most cases of childhood lead poisoning are caused by drinking water that contains lead.
10. _____ Warm tap water usually contains *less* lead than cold tap water.
11. _____ Some dishes and pottery are not safe to use in cooking or for eating, because they contain lead.

12. _____ Most children get lead poisoned by breathing in lead, rather than by eating or swallowing lead.
13. _____ The human body needs a small amount of lead for good nutrition.
14. _____ A balanced diet, with a good amount of iron and calcium that does not contain too many fatty foods, decreases lead absorption by the body.

Indoor Air Quality

15. _____ You cannot see, smell, or taste many indoor pollutants.
16. _____ You cannot do anything to prevent indoor air quality problems.
17. _____ Indoor air pollutants can be either natural or artificial.
18. _____ People spend as much as 90 percent of their time indoors.
19. _____ Opening a window will always solve an indoor air pollution problem.
20. _____ Smoking is only dangerous to the person who is smoking.
21. _____ Pesticides only hurt the pests they were designed to kill

Part 4

Directions: Please read each question and write your answer below. Feel free to write as much or as little as you like. You do not have to answer every question, although your feedback is highly appreciated.

Why did you decide to take a course at HPD?

Why did you agree to answer this survey?

Thank you for your feedback!

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