

STATISTICAL EVALUATION OF BODY MEASUREMENTS AND BODY IMAGE
PERCEPTION IN LEADING AND TRAILING EDGE BABY BOOMERS

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ABSTRACT

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by Laura Ann Jay

The baby boomer generation accounts for a large part, roughly 26.1%, of the population in the United States (Hellmich, 2010). This market segment involves humans between the ages of 44-64, born between the years of 1946-1964. The boomers are willing to spend, typically have a longer life span, and are looking for apparel items that follow current trends. The boomers are worthy of a specific marketing approach that is targeted individually toward them. This research reinforces the need for a conscious effort of this marketing approach, supported by statistical evidence.

The purpose of this investigation is to statistically analyze the body measurements and body image perception between trailing-edge and leading-edge female baby boomers. The Statistical Package for the Social Sciences (SPSS) was used in the study as a tool to analyze variations in body dimensions and perceptual aspects between the two groups. The variations were analyzed as a function of age and Body Mass Index (BMI) of leading and trailing-edge baby boomers. With the results, marketers gain a better understanding of the baby boomers' body perception and actual body measurements. This enables them to better target this particular group of consumers. The study evaluates the differences between the two groups of boomers using their body measurements and a personal self-evaluation.

Data analyses of body measurements showed that the trailing-edge baby boomers have lower mean measurements as a whole and are more satisfied with their body image and mental picture of themselves. Nevertheless, neither of the parameters varies significantly between the

two groups. Furthermore, statistical analyses resulted in rejection of the hypotheses, which are: The leading-edge baby boomers will have higher means of their waist girth, bust girth, and hip girth measurements than the trailing-edge baby boomers and the leading-edge baby boomers will have lower means of their body image, clothing choice, and body satisfaction post-survey results. Nonetheless, a mass targeting approach by apparel retailers is still valid. It can be concluded that the two groups can be targeted as one group.

Analysis of the post-scan survey given to the boomers showed that the women subjects exhibited a trend of leaning towards the middle of the satisfaction survey. The questionnaire in the survey demonstrates how the boomers view their body image, clothing choice, and their overall body satisfaction. The survey results do not lend themselves to any exact idea for a marketing approach to the apparel retailers targeting the baby boomer generation. However, the research results from this study provide interested companies/retailers a better understanding on women's actual body measurements and how the boomers feel about their own body satisfaction. This can lead an apparel company to formulate an idea that targets the baby boomer generation with success and will help drive positive results.

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CHAPTER I

INTRODUCTION

According to Harkin and Huber (2004), “the baby boomers have often been seen as a deeply symbolic generation- swollen by a surge of postwar optimism, reaching adulthood in tandem with the 1960s and a new set of social freedoms, consumer innovations, and political conflicts. Challenging received wisdom has been embedded in their self-image, and as they age, we should not expect this attribute to fade” (p.11). With this idea in mind, it makes the baby boomers an interesting group to study. It is too large of a market segment to be silent or disconnected from topics that are of interest to them (Harkin and Huber, 2004). Companies should see this group as important and worth targeting. The population is too large to be overlooked. According to the United Nations Population Fund (2012), “today there are 893 million people over the age of 60 worldwide. By the middle of this century that number will rise to 2.4 billion”. The most recent survey of consumer expenditures from the U.S. Bureau of Labor Statistics found that the baby boomer population spent over 2.9 trillion in 2009 (as cited in Horovitz, 2010, p. 1).

Although impressive, statistics are difficult to portray the entire story of the business opportunity within this generation. Understanding the baby boomers from both a marketing perspective and the perspective of apparel fit are important factors in the consideration for an overall company profit margin (Green, 2003).

For this research, pre-existing data from a 3D body-scanning data set at Central Michigan University was used as a reference point for the baby boomer population. The body scanner has the ability to obtain three-dimensional data of the surface of the human body (Connell, Ulrich, Knox, Hutton, Trent & Bruner, 2003). The body scanner utilized for this study is located in

Mount Pleasant Michigan, on Central Michigan University's campus. The body scanner collects 300,000 digital data points from each scanned subject within 15 seconds. It then creates a virtual image of the scans and over 120 body measurements. The waist girth, bust girth, and chest girth measurements were the three measurements used to compare and contrast the leading and trailing edge baby boomers. The two groups were also sorted based on their body mass index (BMI).

Along with the data from the body scanner, a survey was also evaluated regarding a number of participant's perception of their body image and body satisfaction. The survey information was pre-existing in the database from a post-scan measure taken from the participants. Both forms of data were assessed to aid retail companies. Essentially, the information will help them to better target and understand this under-represented market.

Conceptual Definition of Terms

The term baby boomer is used to describe an individual who was born during the post-World War II baby boom. The typical baby boomer can be referenced as born between 1946 and 1965. For this particular study, the baby boomer generation was separated into two groups: trailing and leading. A trailing-edge baby boomer was born between 1955 and 1965. A leading-edge baby boomer was born between 1946 and 1954 (Flynn & Foster, 2009).

Underestimated spending, target market, physical appearance, and body image are the key terms that are addressed in this study. Underestimated spending is a low value set on the profit margin that could be generated from the market being targeted. Target Market is the particular segment or group a service or good is intended toward. Physical appearance is also known as human illustration. Physical appearance is the main look of a human and can play a

role in how a person is perceived. Finally, body image is the mental picture one has of his/her body.

Purpose

The purpose of this investigation was to statistically analyze the body measurements and body image perception of trailing-edge and leading-edge baby boomers. The statistical treatise uses Statistical Package for the Social Sciences (SPSS) as a tool to estimate the variations in body dimensions and perceptual aspects between the two groups. The variations were analyzed as a function of age and BMI of leading and trailing-edge baby boomers.

This research helps to identify trends in body dimensional change with respect to aging. Also, marketers will gain a better understanding of the baby boomers' body perception and actual body measurements. This will enable them to better target this particular group of consumers. Results of this study offer apparel retailers and manufacturers an improved understanding of the baby boomers' body measurements to ensure that their clothing is designed accordingly for this particular target market. Often times, baby boomers are targeted as one group. The study discusses whether the baby boomers should be targeted as a whole group based on their body measurements and body satisfaction, or if apparel companies would see grander profit margins if the two groups were targeted separately. Finally, the study presents the results on how the boomers perceive their body image and clothing choice in relation to body satisfaction.

CHAPTER II

LITERATURE REVIEW

Baby Boomer

Baby boomers are an important population to target. The 50+ population is a growing segment worldwide and are expected to live longer than the generations before them. According to Rowley (2012) there were 76 million Americans born between the years of 1945-1964. Rowley (2012) also noted that with this, the population is expected to grow 73 percent in 2020 since 2000. Their spending power is underestimated and their fit is, often times, not accurate. This group is a fundamental market to target because the baby boomers are in relatively good health, their children are grown- therefore their family time is more flexible, they are still working, and are in the mainstream of life. The 50+ household typically is smaller because their children are starting to move out, which translates to more money spent on less people (Johnson, 2005). Many of them are climbing to the top of their careers, unlike many younger consumers who are entering many entry-level positions and starting their careers. With this, they are spending money on apparel items to maintain their career wardrobe. Their numbers and economic potential make it necessary for marketers to create products that meet and exceed their expectations (Howarton and Lee, 2010).

Because many of them are towards the top of their careers, the boomers often have more disposable income than the younger generations. The boomers are not beginning their careers with limited income, nor entering retirement at an early age. According to Laura Hurd (2000), “Physical signs of advanced age are more harshly judged in women than in men. Older women are especially disadvantaged in their struggles to achieve and maintain the existing cultural standards of physical attractiveness” (p.78). It is also noted that given that weight gain is

normative for women as they age, it is realistic to believe that body image concerns can be expected for women in the baby boomer generation.

Underestimated Spending

Baby boomers, as a whole, are beginning to enjoy newfound freedom; the combination of wealth, health, and longer life gives them a new phase of their life. In this new phase, many women feel as though they are given a chance to start fresh and let go of their past responsibilities. With many of the boomers' children out of the homes, they have a chance to be independent again and revisit their desires and interests for their own personal fulfillment (Harkin and Huber, 2004). Marketers have often ignored older consumers within the fashion industry even though many have substantial levels of disposable income and are willing to spend (Sawchuck, 1995). This description can be connected with underestimated spending. Although some may predict income levels to tend to decrease after age 55, recent data indicates that people 50 years and older have lower poverty rates than the remainder of the population (EBRI, 2012).

Embracing their newfound freedom in everyday life is growing within the population. This idea can be easily related to the apparel industry and their clothing purchases. As a generation, the baby boomers are likely to reject some traditional associations that are typically generalized about the population. An example of this generalization includes that the boomers strictly dress for comfort, not style. To overcome this, boomers may use their purchasing power to dominate the rituals of popular culture and select garments that are not solely comfortable, but also follow the latest fashion trends.

Reisenwitz and Iyer (2007) found that 84 percent of baby boomers asserted a positive response to the following questions: I usually have one or more outfits that are of the very latest style and when I choose between the two, I usually dress for fashion. Within the survey, the

boomers also admitted that they like to shop for clothes. From this, it is assumed that fashion is of interest to this group of boomers and it can be assumed that other boomers have a certain curiosity about fashion.

The retail industry is facing extreme competition and it is vital to understand how to market towards this population. Marketing toward this population is often downplayed because of the stereotypes given to this group. Youth and youthfulness is still worshiped (Barak, 1998) and the issue then arises about how to market to these older consumers who do not want to feel, or feel the need to act old. Runways and popular fashion magazines are examples of the industry and the concentration on younger adults. Apparel companies that take an interest in this untouched market could drive results and increase sales. In today's society, consumers tend to feel younger than their actual recorded age. With this, marketers and retailers should focus on attracting the age that the consumer feels (Myers & Lumbers, 2008). Because it is known that baby boomers have the ability and means to spend, it is crucial to ignore the generalizations made about the population and their underestimated spending typecast.

Target Market

Target market is the particular segment or group a service or good is intended toward. The overall formation of the baby boomer population is changing. Customers in this target market do not desire the same apparel items that were desired years ago for the same-age target market. It is essential for professionals in this industry to understand this to be successful. Baby boomers are influenced to purchase clothing based on their respective lifestyles. A wide range of activities can define these lifestyles from careers to leisure activities, to socio-economic and education levels. Boomers do not want to purchase clothing items their teenage daughters would wear, nor clothing targeted toward their mother's age range (Howarton and Lee, 2010).

According to the US Census in 2010, the baby boomer population made up 81.5 million and grew 31.5 percent from 2000-2010 (Howden and Meyer, 2011). Of this population, studies show that women out-number men. Despite the size of this particular population, they have been neglected. These consumers will have a significant impact on spending power. For example, Verdict (2006) stated that spending among this group accounted for a quarter of total retail sales in 2005 and is estimated to reach around a third of total sales in 2015 (as cited in Myers & Lumbers, 2008, pg. 294). When this type of trend is forecasted and researched, it is easy to see that this market is worth investigating.

According to Harkin and Huber (2004), “A combination of factors makes them the wealthiest demographic group in contemporary society”. A survey of 45,000 over-50’s published in April of 2004 by a specialist marketing agency, Millennium, for example, discovered that 86 percent felt ignored by the marketing industry. Their research uncovered a large degree of brand awareness, which is generally associated with the younger population. This target market cannot be ignored. Much research has shown that younger consumers are much more likely to switch and experiment with different brands. Older consumers tend to be more brand loyal; if they find a brand of apparel that works for them and fulfills their needs, they often continue to maximize the brand. They pour their disposable income into brands they are aware of and trust (Reisenwitz & Iyer, 2007). If apparel companies take a greater interest in this target market and their particular needs, an increase in profit is likely to be a direct correlation.

To better understand and break down the complex baby boomer market, we must understand what factors contribute to the complexity. Also, those individuals within the boomer group will respond to marketing approaches differently. Factors that make consumers react

differently to marketing approaches are not solely based on need, but factors including: available spending power and lifestyles of the boomers.

As people go through life, they experience major life-changing events, examples can include but are not limited to: menopause or a family crisis. These types of situations will cause the boomers to react differently and on an individual basis to marketing approaches. When people face life changes, their needs change as well as their perception of marketing approaches. The term “gerontographics” is used to refer to one segmentation approach involving life-changing events and circumstances that occur later in life, when a human is entering the baby boomer age segment, that shape an individual’s attitudes and behaviors (Moschis, 2000). It is crucial to note that when marketing to such a large group of customers, businesses must target sub-groups within the market to gain a competitive advantage within the apparel industry. This can involve taking some of these life changing events into consideration and marketing directly to the situation the boomers find themselves involved in.

Physical Appearance/Physical Attributes

The baby boomers have concerns about their physical appearance. Physical appearance is believed to be an important factor in the development of the personality and how the human is perceived. Research shows that physical attractiveness correlates to an interest in image and fashion. Staying young in appearance is considered important to many of the women who fall into this generation. Women have a hard time with fit, especially as their bodies change dramatically over time even if they remain the same weight.

Harkin and Huber published baby boomer research in 2004; they found maintaining one’s appearance was correlated with a balanced state of mind from the women in the focus groups. Continuing to put effort into one’s appearance is a sign of continuing to engage with the world

and of maintaining a sense of dignity and self-respect. Taking care of oneself can go hand-in-hand with the apparel industry as clothing is related to how one is perceived and perceives (Harkin & Huber, 2004).

The baby boomer generation grew up in a time when youthfulness was celebrated. Part of this youthful attitude involves: active and vigorous questioning of established ways of performing tasks and also a desire for fresh experience that may be out of the norm. This relates to their idea of being forever young, therefore determined not to become old (Smith, 2007).

Baby boomers do not want to feel 'old'. As consumers age, they experience changes in their body, skin, hair, etc. Because of cultural cues, it is seen as undesirable to appear old. This can be seen in marketing approaches that are existent in the apparel field. For example, magazines, fashion shows, and models, in general, appear to be young and beautiful. Self-perceived age, non-chronological age, or cognitive age may contribute more than chronological age in understanding how older consumers view themselves and how they consume – and how these two can play a role in the brands the boomers tend to favor (Reisenwitz & Iyer, 2007). Because of the cultural value or ideals of beauty, appearing old has been undesirable; this can leave older women to feel more dissatisfied with their overall appearance (Joung & Miller, 2006). It is important for marketers and designers in the fashion industry to take into consideration these appearance anxieties and target them accordingly as well as life situations.

The aging population presents an ever-increasing challenge to apparel manufacturers and merchandisers who wish to provide products that align with the older consumer's needs (Horne, Campbell & Scholz, 2000). Shofield, Ashdown, Hethorn, LaBat, & Salusso (2000) performed a study that was seeking to improve pant fit for women that were 55 years and older. The study evaluated two different pant designs; one design was made for women with a flat seat, while one

was designed for women with a full seat. Both participants and experts evaluated the fit of the pants for the women. This study found that the women with a flatter seat were more satisfied with the fit of the pants for their category. This study proved that the introduction of a shape variable could improve the satisfaction with fit for population segments with equivalent body shape variations. The authors also found that solutions to provide a good fit may include creating sizing for a subset of mature women and developing custom fit methods. This would also help with the boomers' physical appearance predicament that was learned from previously shown researchers among the group.

Howarton and Lee (2010) researched female baby boomers in the Midwest region and reported that 99 percent of the respondents agreed that the apparel industry did not target their needs. They also found that the respondents were most comfortable with their forearms, lower legs, and neck. They were the least comfortable with showing their upper legs, breasts, and stomach. When asked what the women would be most likely to hide when naked, 90 percent of the respondents answered they would hide their stomachs.

As elderly consumers' market segment continues to increase, solutions are needed to help with their frustrations toward apparel fit. Physical changes can affect how apparel items fit, and may result in lowered satisfaction with apparel products. As women enter menopause, they may realize their clothes fit differently than they once did due to their changing bodies. Apparel fit is an important consideration when targeting the boomers, it is often the first thing considered when selecting a garment, and one of the main reasons apparel items are returned to the retailer (Howarton & Lee, 2010). When targeting the baby boomers, it is important to understand that fashion is related to the boomers' physical appearance. They typically do not have the same physical appearance anxieties as a young girl would have when shopping for apparel items.

Menopause is known as a significant transition period that has been associated with adverse changes in a female's body composition and the fat distribution and how it changes as a woman ages (Sternfield, Bhat, Wang, Sharp, & Quensberry, 2005). This is related to the physical attributes the female baby boomer faces. Menopause is associated with: losses of lean mass and increases in fat mass, and redistribution of fat from periphery to the center of women as they age (Sternfield, Bhat, Wang, Sharp, & Quensberry, 2005). Sternfield, Bhat, Wang, Sharp, and Quensberry (2005) performed a study looking at 248 White and Chinese middle-aged women and their post-menopause body types. In general, they found that the Chinese middle-aged women had a higher fat percentage in their bodies than the White middle-aged women. They also found that women who took part in exercise had a lesser percentage of body fat. Physical activity was inversely related to waist circumference. They also found that the late post menopause was associated with lower lean mass and also tended to be associated with a higher percentage of body fat.

Nassis and Geladas (2005) performed a study that was created to describe age-related patterns in body composition changes for women 18-69 years old. They used methods that involved anthropometric measures, including: height, body mass, waist and hip circumference, and skinfold thickness. They looked at 441 healthy women placed into five age groups. They found that body mass index, fat mass and waist-to-hip ratio were all higher in the age groups of 40-49 years and above. This is again showing that the older women have more reason to be dissatisfied as their body fat increases with age. In contrast, fat free mass remained unchanged in the age spectrum studied. Central adiposity, as indicated by the trunk to extremity skinfold ratio, increased after 50-59 years compared with the 18-29 years old group. Body fatness and central adiposity were associated with aging. These are the types of physical attributes that need to be

looked at within the population of baby boomers. Often the baby boomer population is looked at as a whole, it is important to investigate the population in the leading and trailing groups to uncover any undiscovered facts.

Body Image

Body image is the mental picture a woman has of her body. Body image is different than the physical appearance because body image is internal. The body image aspect of women has been largely ignored in literature and little is known about how older women negotiate and interpret the aging process in their daily lives. This is in terms of its effects on the boomers' actual perceptions about their bodies. Older women have had much more time to live in their bodies than younger women so it is important to gather their feelings on their body image even though there is little research done on the topic (Hurd, 2000).

The concept of body image can be subdivided into a number of components. These components can be perceptual or attitudinal. How a woman perceives her body has much to do with her attitude and perception of herself. Perceptual body image is typically measured by the actual body size in relation to relative body size. The attitudinal components can be classified in four categories. The groups are: evaluation of body image, feelings that are associated with the female body, investment in personal appearance, and the behaviors that are related to the body image feelings (Grogan, 2008). For many older women, the realities of sagging, wrinkles, increased fat deposits, loss of elasticity, and declining physical abilities make the attainment of the ideal female body difficult, if not impossible (Hurd, 2000). And as research shows, these factors are unavoidable as women age, so targeting them specifically is necessary for increased profit for companies.

In a qualitative study performed by Harkin and Huber in 2004, baby boomers were interviewed about life's debates. Among the interviewees, there was a clear dislike of the physical signs of aging among the women. They spoke about things such as their fears of wrinkly skin and grey hair. Many of the women expressed horror in the interviews because they felt as if they were already experiencing such issues at the early baby boomer stage. These types of concerns are related to a women's body image because she is worried about things from an internal level.

Hurd (2000) performed a qualitative study assessing older women and their perception of body image. Most of the women interviewed described their aging bodies in derogatory terms. Sixteen out of the twenty-two women all said terms such as: ugly, sagging, yuck, disaster, and awful. These words were used in connection to what a female body looks like when entering the baby-boomer stage of life. For example, one woman described herself in such a way:

“...women's bodies are ugly. Older women's bodies that is, I think most people think their bodies are ugly. Women tend to think this even before the age of 60. Once they start to sag and stuff, there's no beauty in it. If you're looking at the bodies we see on TV, all these lovely gorgeous girls. If that's beauty, then women over 50 or 60 whose bodies are sagging, their busts are sagging, their bellies are all over, you know, from the baby bearing, and the buttocks are sagging- they're ugly. There's no beauty in that. No man is ever going to find beauty in that” (pg. 87).

Body Mass Index

Body mass index (BMI), also called the Quetelet Index, is a calculation used to determine a person's amount of body fat. The formula was developed in the mid-1800's but was not commonly utilized in the United States until the mid-1980's (Davidson and Longe, 2008). The

BMI gives the researcher a consistent way of assessing a person's weight in relation to their height. This specific number often gives healthcare professionals an objective way to discuss a patient's body weight with them. The body mass index is also a statistical calculation and can be used to determine trends or forecasts within a cluster of people.

Belgian mathematical and scientist Lambert Adolphe Quetelet developed the formula used to calculate BMI more than one hundred years ago. Mathematically describing the traits of a population led him to form the "average man" theory. This was created so all individuals could be measured and compared against this average and against others (Davidson & Longe, 2008).

In developing the weight-to-height ratio in the average man, he produced the formula now used for all BMI calculations today. Weight and height are the required pieces of knowledge for generating a BMI. Originally, the BMI equation was calculated using the metric system. To find the BMI using the Imperial system:

$$(\text{weight in pounds} * 703)/(\text{height in inches squared})$$

The BMI calculation for individuals is then used to place them in the underweight, normal, overweight, and obese categories. For the purposes of this study, only the three categories of normal, overweight, and obese were needed as none of the women fell into the underweight category.

Conclusion of the Review of Literature

There is great opportunity in targeting female baby boomers. They are sophisticated consumers with money to spend and they are not against spending the money on products and services. They are for the most part mobile, interested in indulging, and are willing to change

with the trends in the apparel industry (Haynes, 2004). Those who want a share in this particular market segment need to go beyond the traditional marketing approaches used for other segments. The boomers' wants need to be understood and accommodated. When this occurs, customer loyalty will be developed by the baby-boomers. Old age is a long way off. The boomers will live significantly longer than their parents, this is a realistic assumption given healthcare and drug improvements (Stern & Heavey, 2012). Because it is known that the boomers have the ability to spend and should be targeted, companies need to recognize the research found about them to better understand the consumers in this category.

Understanding the female baby boomers is essential for the apparel industry. Awareness of their perceived body image and how their bodies change with age will help target this market with more ease. Looking at the actual scans and measurements from the body scanner and perceived body image surveys will help to understand the female baby-boomers. The results will be presented and evaluated as to why the women view themselves as they do and if they are truly shaped like their physical attributes and body image describes. The terminology used by the older adults will be utilized to understand the perception the adults have of their body image.

CHAPTER III

METHODOLOGY

Research Objectives

1. To statistically analyze the body measurements and body image perception between trailing edge and leading edge baby boomers. The hypotheses considered for investigation are:
 - i. The leading-edge baby boomers will have higher means of their waist girth, bust girth, and hip girth measurements than the trailing-edge baby boomers.
 - ii. The leading-edge baby boomers will have lower means of their body image, clothing choice, and body satisfaction post-survey results.
2. To investigate the relationship between (i) age versus body measurement changes and body image perception, and (ii) BMI versus measurement changes and body image perception.

Data Collection

The women used for the study represent trailing and leading edge baby boomers. The trailing-edge baby boomers are between the ages of 44-53. The leading-edge baby boomers are between the ages of 54-63 (Flynn and Foster, 2009). The baby boomers were selected from an existing database at Central Michigan University by purposive non-probability sampling.

A heterogeneous population was studied for this particular research project. The women are of similar age, but are being compared based on different body types, financial backgrounds, diverse professions, etc. A wider range of the boomers' demographic information can be found in the database of the body scanner at Central Michigan University.

Quantitative survey research and body scanner data were used to test the hypotheses. This study is coded into numerical values to analyze and test the data. Given below are the individual categories used for the research analysis. These are the individual categories that were used to compare the leading and trailing-edge baby boomers.

Groups and Components of Analysis

The two groups of baby boomers were placed into three categories based on their Body Mass Index: Normal (18.5-24.9), Overweight (25.0-29.9), and Obese (30.0+). Body Mass Index as a rule also includes an underweight category, but none of the women studied fell into this specific category.

Body Measurements

The hip, bust, and waist measurements were taken from the existing body scanning database at Central Michigan University. After the information was taken from the database, it was moved into an Excel spreadsheet for preliminary analysis. The means of each measurement in each measurement category were used as a comparison between the two groups of baby boomers. After the measurements were moved into SPSS for further analysis, an Independent t-Test was conducted to test the research hypotheses. A guide to data analysis written by Marija Norusis (2002) was utilized to understand SPSS and how it could be utilized for this study. The t-Test assesses the significant difference in mean values between two groups of baby boomers. The overall bust, waist, and hip measurements were compared with one another, overall and then separately based on their specific BMI category. The BMI based analysis, in addition to leading and trailing age group comparisons, studied in this research ensures the inclusion of appropriate weight and height dependent factors.

Post-Scan Survey Comparison

An existing post survey data that was originally completed by the baby boomers following the body scanning was also utilized in this quantitative study. The survey was distributed to the women post-scan minutes after their measurements were taken in the body-scanning device. The subjects were shown their body-scan, then prompted to fill out the quantitative survey questionnaire. The survey questionnaire distributed to the participants was extended, but for the purpose of this study, four questions were used for analysis. The four questions studied are listed below:

1. To what degree do you feel these images reflect your own mental picture of yourself?
Very Little 1 2 3 4 5 6 7 8 9 Very Much

2. To what extent do you believe these images will impact your clothing choices?
Very Little 1 2 3 4 5 6 7 8 9 Very Much

3. To what extent do you believe these images will impact your body image (mental picture of self?)
Very Little 1 2 3 4 5 6 7 8 9 Very Much

4. To what extent do you believe these images will impact your body satisfaction?
Very Little 1 2 3 4 5 6 7 8 9 Very Much

The responses were recorded for each individual boomer and moved to Microsoft Excel for analysis. After calculating the mean values, the information was then tested in SPSS using the independent t-test method. Body satisfaction, mental image, clothing choice, and body image were measured with the survey using a 9-point Likert Scale. On the Likert Scale, 1 represents

very little satisfaction and the number 9 represents very much satisfaction. This is an important aspect of the research because it provides results based on their actual emotions as baby boomers. The measurement information provided a direction with actual measures from the scanner, but the post-survey provided how they felt about the measurements and would lead into marketing approaches towards the group.

The means from these questions were calculated to record if there was a substantial difference in the body satisfaction, clothing choice, and body image when comparing the two groups of baby boomers. After the results were calculated for their overall mean, the information from four survey questions was placed into SPSS. Four independent t-tests were performed on the data as a means of comparing the two groups. The independent t-test fit this portion of the study most appropriately because the means of two groups were being compared. Figure 3.1 represents the age and BMI groups used in the study and Figure 3.2 displays the components of research.

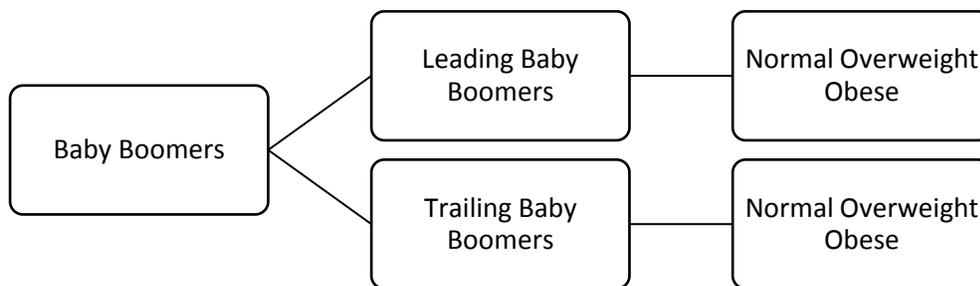


Figure 3.1 Age and BMI Groups Used in Research Analysis

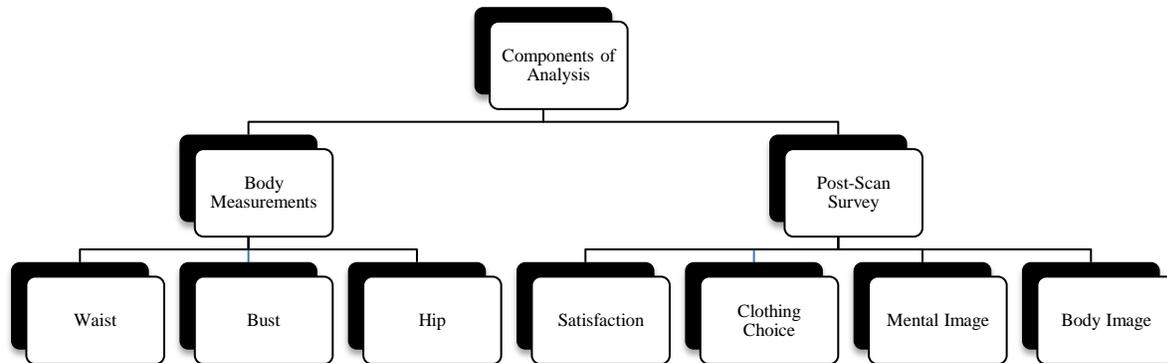


Figure 3.2 Body Measurements and Body Image Perception Components of Research

Statistical Tools

Below is an explanation of the statistical tools used for the research.

Independent t-Test

The independent t-test was used for this research. It is utilized in this study to compare the means of the two sample populations. It is used to see whether the means are statistically different or whether it is just a measure of chance.

Levene's Test

Levene's test studies the null hypothesis that the two samples come from populations with the same variances. To test the significance the alpha level was set at .05, which is common in research studies. If the value is below .05, you reject the hypothesis that the two population variances are equal based on the Levene's test. In some instances, this test is a follow up to the independent t-test and is utilized when the hypothesis is rejected.

Levene's test was used as an inferential statistic to assess the equality of variances in the different samples. Furthermore, this research assumes the variances of the population are equal to one another; therefore Levene's test is used to justify or validate this assumption.

Levene's test uses the null hypothesis to see if the population variances are equal. The Levene's statistical test gives two values that are: (i) F Value and (ii) Significance Value (Sig.). This represents that the higher F-Value indicates the greater possibility of having different population variances. Contrast to that, the higher Significance Value (>0.05) specifies the greater probability of having equal variances.

ANOVA

Analysis of variance (ANOVA) is a statistical technique that allows us to test a hypothesis based on the distribution of sample variances. This examines the variability of the sample values. It is used to understand how much the observations within each group vary as well as how much the group means vary. The univariate ANOVA method was used for this particular study; this procedure assesses the relationship of one or more factors with a dependent variable. The ANOVA limits the amount of type I errors, false positives, which could be formed if strictly using the independent t-test method. The ANOVA is useful when comparing variances. For this study, the BMI was the dependent variable tested.

A post-hoc analysis was performed as well; this involves looking at the data and understanding it after the experiment. This is used after the univariate analysis if the null hypothesis is rejected. This is a more detailed way to observe if the data has other patterns that were not found during the experiment. In practice, post-hoc analysis is usually concerned with finding patterns in subgroups of the sample.

Scheffe's method is an analysis that adjusts the significance levels in a linear regression analysis to account for multiple comparisons. This is used to understand all of the contrasts that are involved at the different mean levels. While pre-planned tests such as the t-test can be used

for comparison, they are not suitable for post-hoc or unplanned comparisons, this is where Scheffe's method is utilized. Scheffe's method is another tool utilized under the ANOVA tool.

Correlation Analysis

Correlation analysis is a statistical method to find the strength of the relationship between two or more variables.

CHAPTER IV

RESULTS AND DISCUSSIONS

The purpose of this investigation was to compare body measurements and body image perception between trailing-edge and leading-edge baby boomers. The calculated means of the chest, hip, and bust measurements were computed from an existing database in order to compare and contrast the two groups. The baby boomers' body image perception, clothing choice, mental image, and body satisfaction was also calculated, in regards to the means, and evaluated for the study. The research question figured prior to the performed study stood: *Is there a significant difference in the body measurements and body image perception between trailing-edge and leading-edge baby boomers?*

The sample population consisted of: 52 trailing-edge baby boomers and 28 leading-edge baby boomers that were selected from an existing database from the body scanner at Central Michigan University. The sample sizes between the two groups are different from one another; all of the boomers included in the database were pulled from the database for analyzing.

Descriptive Statistics

Below is the chart that gives the calculated means of the sample population studied for the measurements of waist, bust, and hip (Figure 4.1). Calculating the means allowed an element of comparison for the two groups of boomers. The means of the measurements are shown at the top of each bar. This gives a clear representation of each mean measurement.

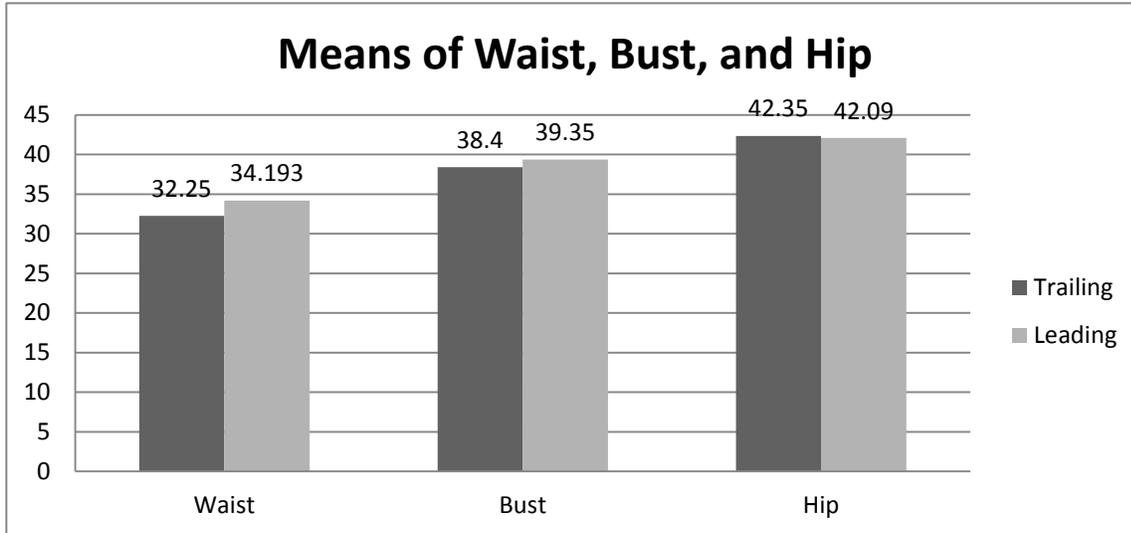


Figure 4.1 Means (in inches) of the Waist, Bust, and Hip

As seen from Figure 4.1, the trailing baby boomers do have lower measurements than the leading boomers in the waist and the bust, but not the hip. A trend is understood for both sets of baby boomers that the waist measurements are the smallest of the three measurements and the hip is the largest.

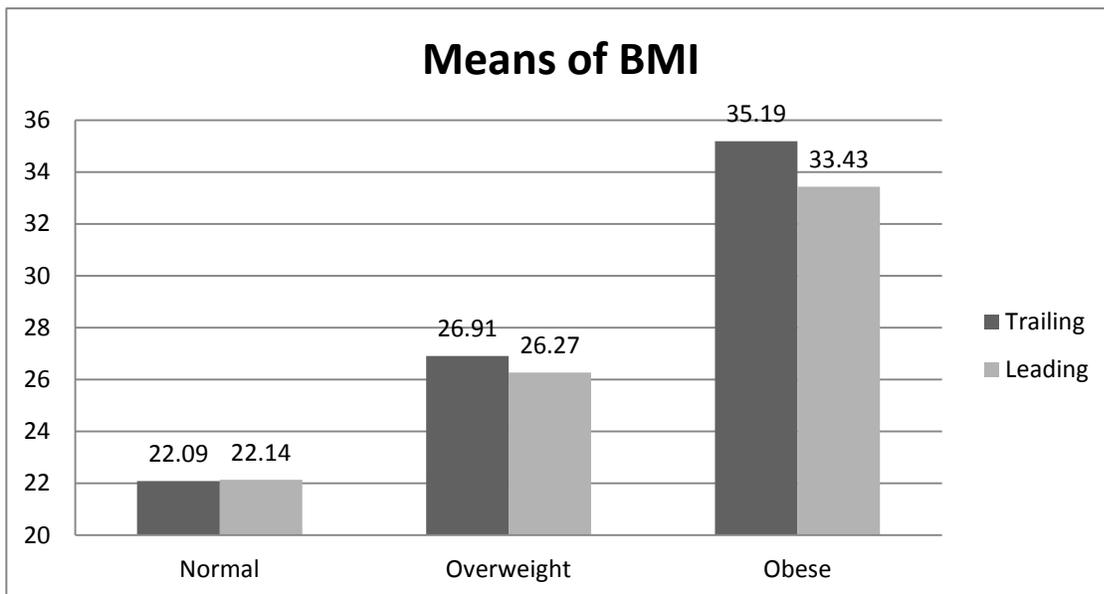


Figure 4.2 Means of the BMI

Figure 4.2 indicates the average BMI of the baby boomers within each BMI category. The normal category has the smallest BMI calculations (18.5-24.9) and the obese category holds the largest (30.0+). The normal BMI category has the lowest average measurements in all three locations on the body and the obese BMI category has the highest average measurements of the three. This demonstrates that separating the baby boomers into the appropriate BMI categories was crucial for successful data analysis, as it is expected that as the body weight and height increased, the measurements would increase also.

The overweight BMI category for the trailing mean is 26.91 and the leading mean is 26.27. The average BMI for the obese trailing boomers is 35.19 and the average BMI for this specific category in regard to the leading boomer is 33.43. This shows that the trailing BMI is larger for this category than the leading baby boomer. To elaborate on this, the waist category for the trailing baby boomer has a mean of 32.25 inches and the leading baby boomer shows a larger mean measurement of 34.19 inches. This contradicting example proves that although the BMI may be larger, it does not always signify larger measurements. This is likely attributed to muscle mass within the trailing population.

The chart for the survey responses is located below (Figure 4.3). This survey was based on a 9-point Likert Scale. Represented on the chart below are mental picture, clothing choice, body image, and body satisfaction. The chart represents the four questions asked in the post-scan survey. The means of each question (mental picture, clothing choice, body image, and body satisfaction) are located at the top of each bar chart.

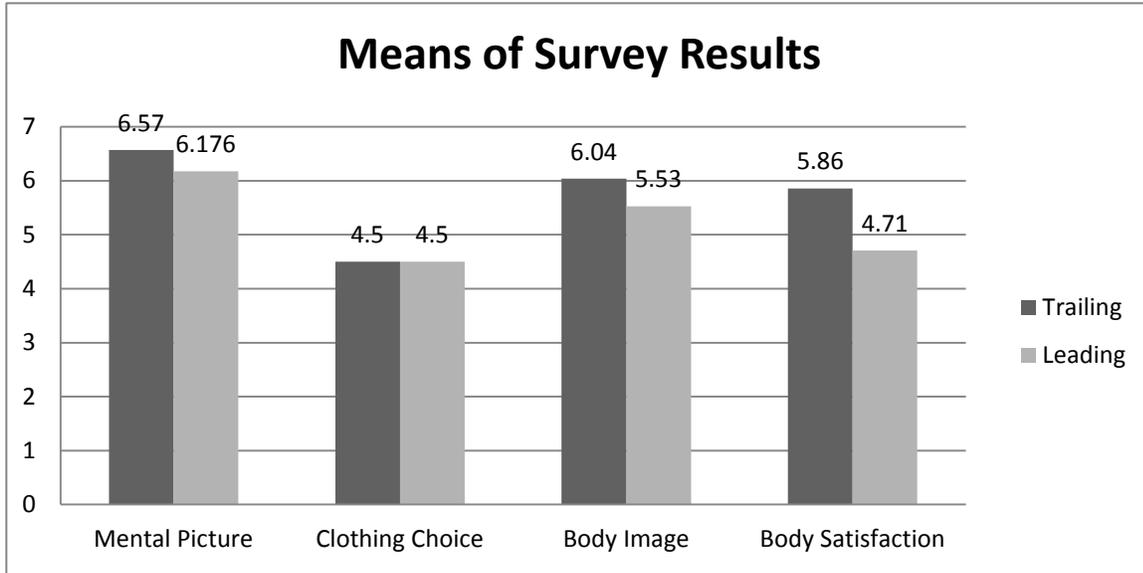


Figure 4.3 Means of Survey Results

All of the calculated means are based upon the 9-point Likert scale for the survey questionnaire. From the survey responses, with the exception of clothing choice, the trailing-edge baby boomers show higher means within their responses with their mental picture, body image, and body satisfaction. The response between the two groups for the clothing choice question shows an equal average in the boomers' response.

Table 4.1, below, gives the reader a snapshot of the mean measurements for both body measurements and body satisfaction responses from the questionnaire. This also displays the number of women involved for the survey. Table 4.1 includes the standard deviation for the measurements. The standard deviations within each category of the trailing and leading edge baby boomers were relatively close to one another.

Table 4.1 Descriptive Statistics of the Trailing and Leading Edge Baby Boomers' Body Measurements and Image Perceptions

Sample Groups	Statistical Information	Age	BMI (lb/inch ²)	Body Measurements (inches)			Body Image Perception (1-9 scale)		
				Waist girth	Hip girth	Chest/Bust girth	Body satisfaction	Body Image	Clothing choice
Trailing Edge (Age between 44-53)	Mean	48	25.22	32.25	42.35	38.4	5.86	6.04	4.5
	Standard Deviation	2.85	5.191	5.067	4.468	4.148	2.49	2.434	2.763
	Number of samples	52	52	52	52	52	52	52	52
Leading Edge (Age between 54-63)	Mean	57	25.74	34.193	42.087	39.349	4.71	5.53	4.5
	Standard Deviation	3.06	4.985	5.365	4.33	4.658	2.553	2.631	2.7
	Number of samples	28	28	28	28	28	28	28	28

Hypothesis Testing

Independent t-Test Results

To statistically analyze the body measurements and body image perception between trailing edge and leading edge baby boomers. The hypotheses considered for investigation were:

- i. *Hypothesis I:* The leading-edge baby boomers will have higher means of their waist girth, bust girth, and hip girth measurements than the trailing-edge baby boomers.

From Table 2, it is shown that the difference between the two groups is not statistically significant. The independent t-test shows all of the waist, bust, and hip p values are above the critical value of .05, therefore there is no significant difference in body measurements between leading and trailing edge baby boomers. And, the hypothesis is rejected or the null hypothesis is accepted.

- ii. *Hypothesis II*: The leading-edge baby boomers will have lower means of their body image, clothing choice, and body satisfaction post-survey results.

The second portion of the hypothesis is also rejected, with the exception of the body satisfaction between the two groups of baby boomers. From Table 2, the mental, clothing choice, and body image p-values are all above the .05 critical value. Using the independent t-test the null hypothesis is accepted for the mental, clothing, and body image questions and the null hypothesis is rejected for the body satisfaction post-survey question.

Table 4.2 Hypothesis Testing Results

Parameters	t- value	Significance	Degree of Freedom
Age	-0.434	0.666	78
Waist	-1.606	0.112	78
Bust	-0.934	0.353	78
Hip	0.257	0.798	78
BMI	-0.434	0.665	78
Mental	0.692	0.491	78
Clothing	0.000	1.000	78
Image	0.928	0.356	78
Satisfaction	2.107	0.038	78

Using Levene’s Test, it was verified that the two sample population have equal variances. If the observed significance value for the Levene’s Test is less than or equal to 0.05, the null hypothesis that the two population variances are equal is rejected. For the Levene’s Test in this

study, none of the values except the mental picture are below the critical p value of .05, therefore this is the only case in which the equality of variance null hypothesis is rejected.

Table 4.3 Levene's Test Results for Equality of Variances

Equal variances assumed	Levene's Test for Equality of Variances	
	F-Value	Significance
Waist girth	0.688	0.409
Chest girth	0.744	0.391
Hip girth	0.064	0.802
Age	0.008	0.93
BMI	0.02	0.887
Mental Picture	5.31	0.024
Clothing Choice	0.093	0.761
Body Image	0.456	0.501
Body Satisfaction	0.015	0.902

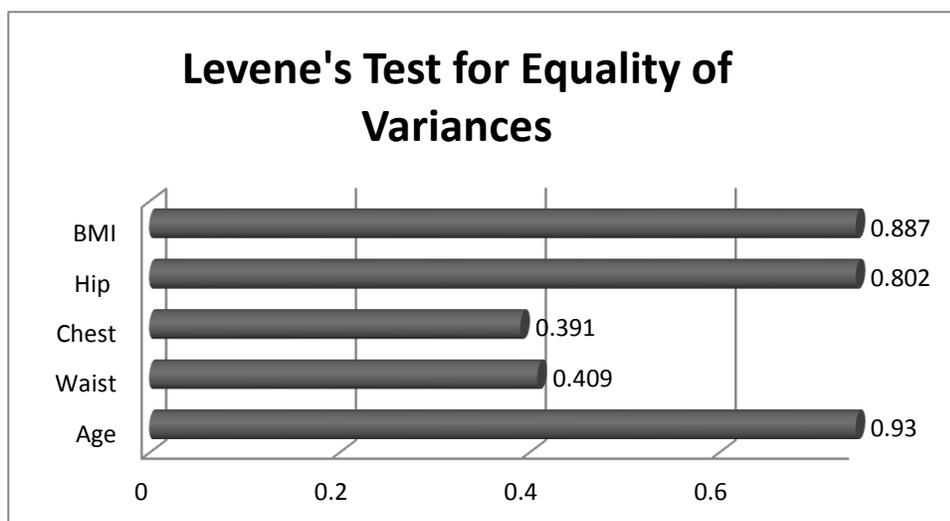


Figure 4.4 Levene's Test for Equality of Variances (Measurements)

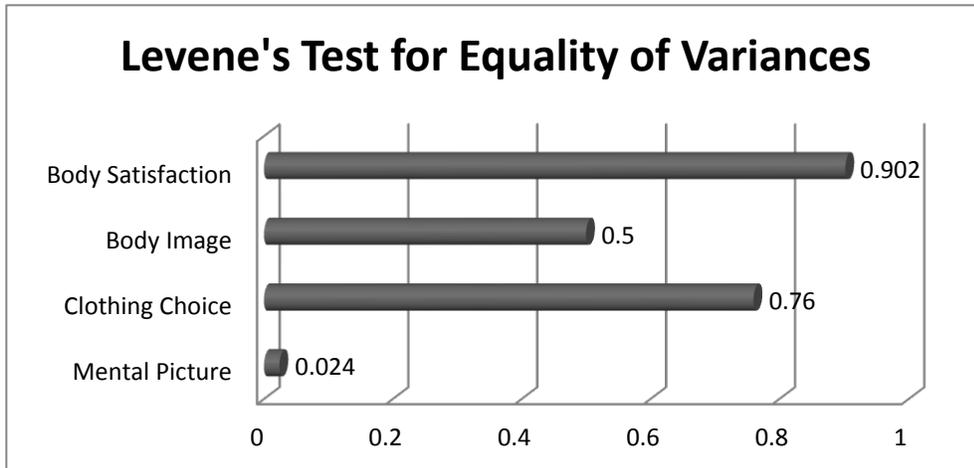


Figure 4.5 Levene's Test for Equality of Variances (Post Scan Survey)

Analysis of Variance Results

When looking at the ANOVA analysis within the two groups, the significance value is 0.174 (Table 5), which is greater than the 0.05 critical value. Therefore, there is no significant difference in the population means of two baby boomer groups. Obviously, there is an effect of the BMI group (significance value is .000) and their means within the three different groups. This is because the baby boomers are split up into these three groups according to their particular BMI. The BMI groups have significant difference from one another, but exactly where the difference among groups occur will be understood only after the Post Hoc test. Knowing this, it is necessary to test the BMI group using Post Hoc method to understand the BMI groups' performance better. But, age has no significance to a person's BMI according to this research.

Table 4 (below) displays the number of women studied within each category and how the means and standard deviations vary among the different BMI groups. We have determined previously that there is no statistical significance between the groups but Table 4.4 breaks down each group into separate rows.

Table 4.4 Univariate Analysis of Variance - Descriptive Statistics (Dependent Variable–BMI)

Age	Group	Mean	Std. Deviation	N
Trailing Edge	Normal	22.0875	1.85273	32
	Over Weight	26.9117	1.52167	12
	Obese	35.1950	3.75068	8
	<i>Total</i>	<i>25.2173</i>	<i>5.19181</i>	<i>52</i>
Leading Edge	Normal	22.1400	1.60072	14
	Over Weight	26.2675	1.34400	8
	Obese	33.4300	4.15573	6
	<i>Total</i>	<i>25.7386</i>	<i>4.98437</i>	<i>28</i>
Total	Normal	22.1035	1.76224	46
	Over Weight	26.6540	1.45288	20
	Obese	34.4386	3.87799	14
	<i>Total</i>	<i>25.3998</i>	<i>5.09459</i>	<i>80</i>

Table 4.5 Analysis of Variance Results

Source of Variation	Mean Square	F	Sig.
Between groups (Age)	337.555	68.878	.000
Within groups (BMI)	45739.994	9333.176	.174

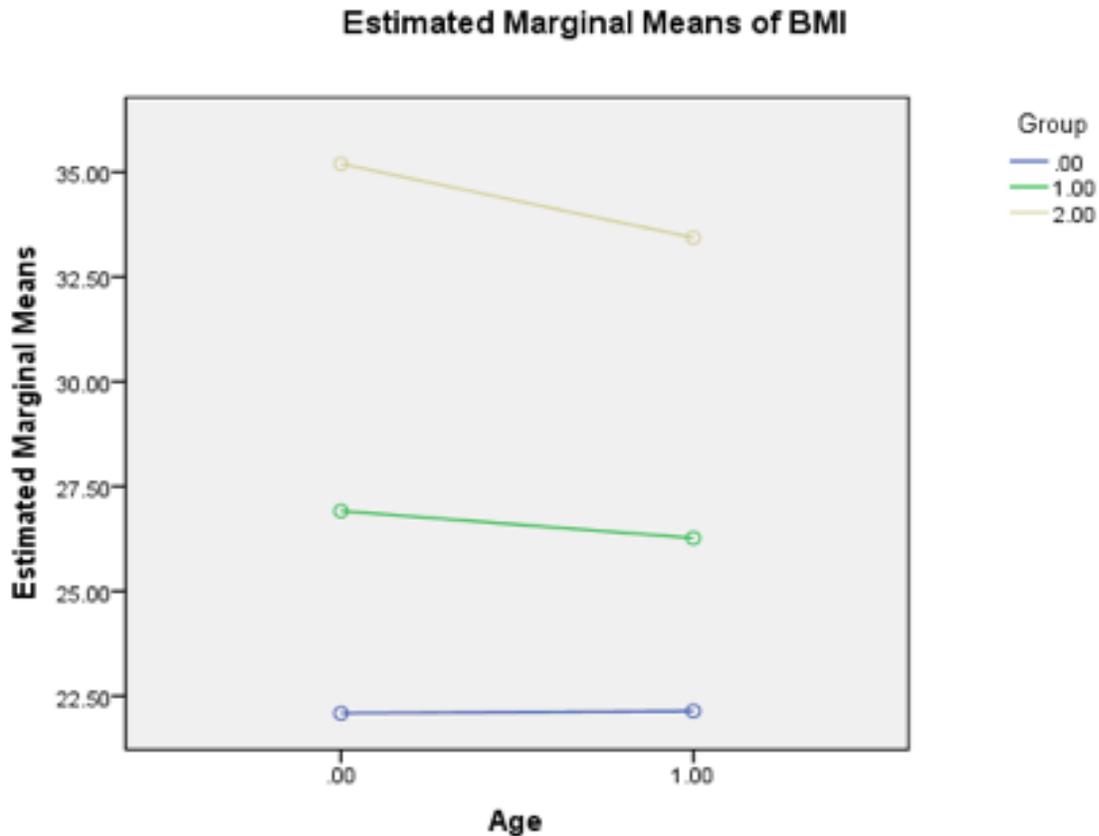


Figure 4.6 Multiple Comparisons of BMI Groups Using Scheffe's Method (BMI Groups: 0-Normal, 1-Over weight, 2-Obese) (Age Groups: 0-Trailing, 1-Leading)

In Figure 4.6, for the obese category, the body mass index decreases as the boomers age. This could be attributed to the obese baby boomers possibly losing muscle mass or beginning to become more health-conscious with age.

Correlation Analysis

Correlation analysis was done to statistically investigate the relationship between (i) age versus body measurement changes and body image perception, and (ii) BMI versus measurement changes and body image perception.

Table 4.6 Results of Correlation Analysis

Components of Analysis		Correlation Coefficients	
		With BMI	With Age
Body Measurements	Waist	0.9998	0.4124
	Chest	0.9983	0.3855
	Hip	0.9988	0.4807
Body Image Perception	Mental Picture	0.9831	0.2073
	Clothing Choice	0.9999	0.2710
	Body Image	0.9202	0.3965
	Body Satisfaction	0.8327	0.0045

From Table 4.6, it is clear that there is no significant correlation between age versus body measurements and body image perception. But, the correlation coefficients for BMI versus body measurements and body image perception are very significant. Especially, the correlation between BMI and the body image perceptions or subjects post scan responses can be analyzed further using the plots given below.

Figure 4.7 shows the scatter plot of mean subject responses for the four questions, grouped by individual values of age. In order to estimate the underlying relationship between age and the responses, correlation analysis was done. While there was a visible trend of clustering of responses by the two groups, leading and trailing baby boomers, no significant correlation was found. The resultant plot shown in Figure 4.7 reflects the randomness present in the subject responses. On the contrary, there was a notable trend between the subject responses and BMI. The subjects were clustered into three groups based on their BMI as “Normal”, “Overweight” and “Obese”. The mean BMIs of these groups showed significant correlation with their mean responses.

Subjects with lower BMIs are typically more conscientious of their mental image and have expressed in this study more body satisfaction towards their body image. However, the outcome of the images on their clothing choice is low, meaning they feel that after seeing their body scan images they are not likely to alter their clothing choices. Typically, subjects with normal BMI tend to have more clothing choices and their body satisfaction levels are relatively higher. Subjects who are overweight and obese have expressed lower body satisfaction levels and their mental image is lower with their actual image causing a greater impact. This relates to the less availability of apparel targeted to people with substantial obesity where as the body measurements are substantially different from the average. It can be observed that higher mental image accuracy has given higher body satisfaction.

Furthermore, the mental image and clothing impact of the actual image are negatively correlated. It could be inferred that lesser the body image assessment of a self, clothing impact is more meaning that these are the target groups for product development. Application of 3D body scanner is a viable solution to develop new customization standards for these baby boomer groups, and apparently can increase the market share in terms of apparel availability.

Age Vs Subject Responses

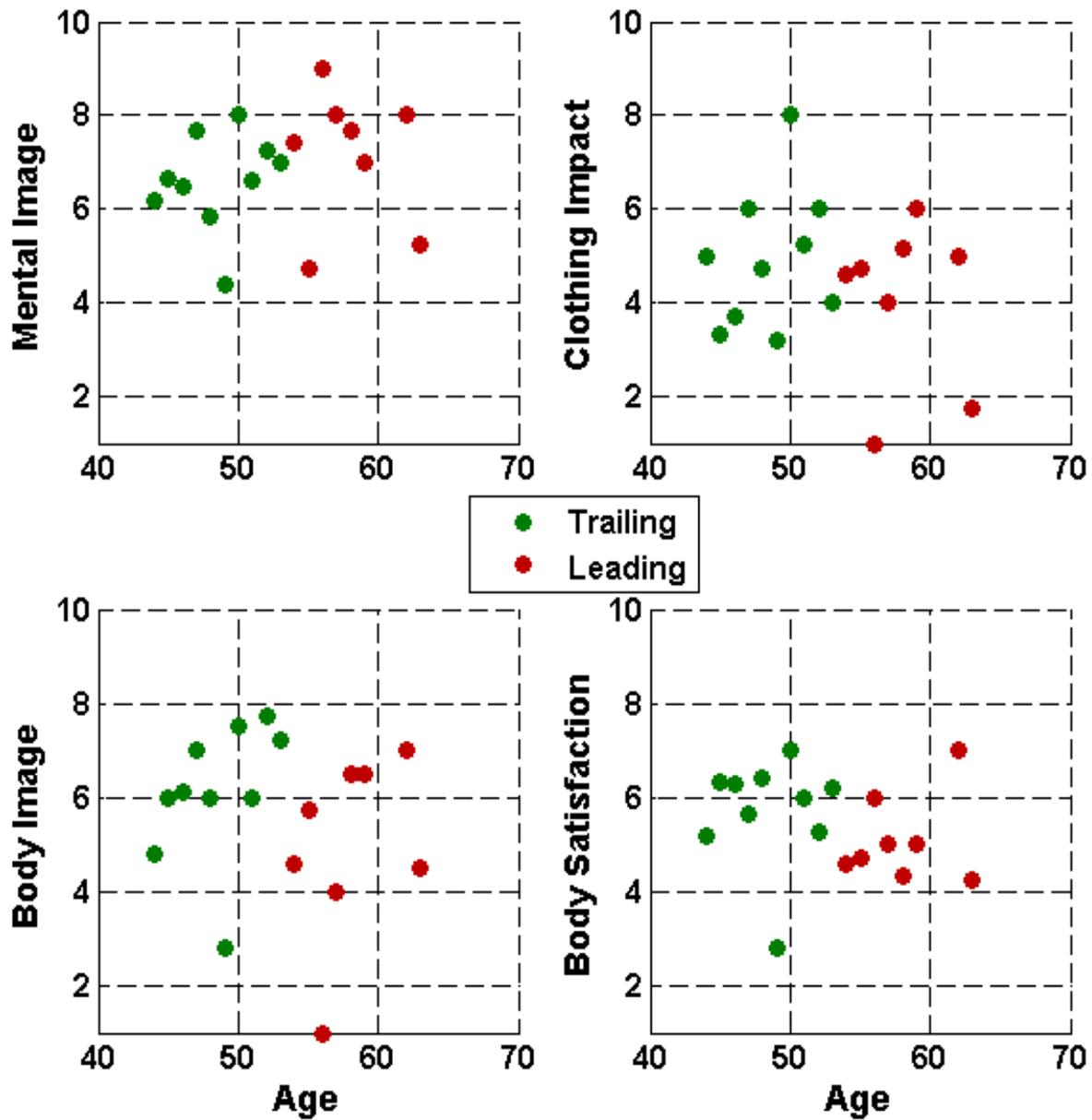


Figure 4.7 Scatter Plot Showing the Relationship between Age and Body Image Perception

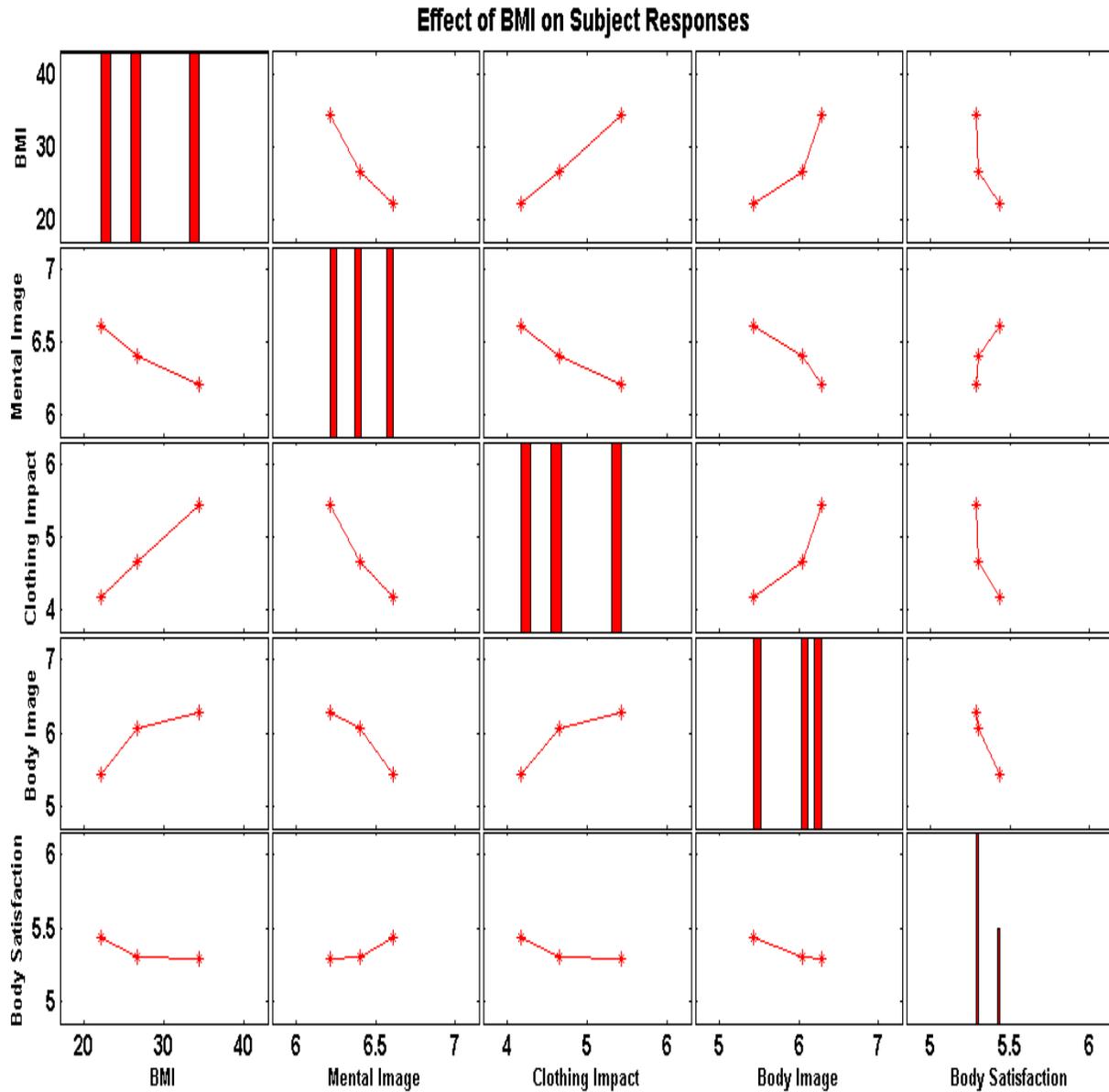


Figure 4.8 Relationship Between BMI and Post Scan Survey Response

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

1. Hypothesis I: The leading-edge baby boomers will have higher means of their waist girth, chest girth, and bust girth measurements than the trailing-edge baby boomers. The first hypothesis (listed above) was rejected. Although the leading edge baby boomers do have higher mean measurements, the difference is not statistically significant as it is not above the critical p-value of .05.

2. Hypothesis II: The leading-edge baby boomers will have lower means of their body image, body satisfaction, and clothing choice.

The second hypothesis was also rejected. This hypothesis suggested that the leading-edge baby boomers would have lower calculated means of body image, mental image, body satisfaction, and clothing choice, therefore being more unsatisfied with the post-survey questions directed towards them. Although the means are lower for the leading-edge baby boomers, this difference, with the exception of body satisfaction, are not significant or above the critical .05 p-value.

3. Correlation Analysis: To investigate statistically, the relationship/trend between (i) age versus body measurement changes and body image perception, and (ii) BMI versus measurement changes and body image perception.

Compared to age, the BMI has a better correlation with body measurements and body image perception. It is clear that age has little effect on subject's responses toward body image perception. Instead, the BMI is the important factor that affects their body image perception in spite of their chronicle age.

The hypotheses testing results was surprising in comparison to the literature review. Most of the information found in literature supported both groups of boomers being completely dissatisfied with their body image, especially with age. This is why the hypothesis was framed that the older group of boomers would be more dissatisfied with their bodies and questions associated with their bodies. The means of the survey show that although the leading-edge baby boomers were more dissatisfied, neither group of the participants weighed heavily toward the bottom of the Likert scale for their satisfaction survey. They were not completely dissatisfied with any emotional aspect of their body satisfaction survey.

This shows opportunity for marketing strategies because women baby boomers have a stigma to be completely dissatisfied with themselves by this age in their life span. The survey results show that all of the responses were just at or above the median on the Likert Scale. Meaning, none of the respondents answered 0, completely dissatisfied, in the questions involved in the personal satisfaction survey distributed to the boomers. When looking at this particular group of boomers, the apparel industry, whether design, fit, or marketing now have a better understanding that the boomers are not as dissatisfied as society presumes based on the findings from this particular study.

The results of the study suggest that both groups can be targeted as a whole based on their similar body measurements. Furthermore, the results also show that both sets of boomers are neither completely satisfied nor completely dissatisfied, but rather fall in the middle. This presents a challenge to retailers and marketers to develop a type of the self-esteem marketing approach, as neither are one hundred percent satisfied. It is important for the apparel companies to understand how the baby boomer's bodies are shaped and provide these retailers with a glimpse of actual female measurements. If the companies are fitting their garments in correlation

with the actual mean measurement results, they may see more business from this group of boomers if targeted appropriately.

When looking at the mean measurements in Figure 4.1, there is a 2-inch difference in the waist category between the trailing and leading edge boomers. When looking at the bust measurement category there is a one-inch difference and lastly the hip category shows equal means between the two groups of boomers. It can be concluded that when looking at the measurements in whole between the two groups; the body measurements are along a similar direction with one another. Furthermore, the waist category house the smallest mean measurements followed by the bust measurements and the hip measurements being the largest. The results suggest that both groups of baby boomers have a similar direction in the way their bodies change with age.

Before compiling this research, it could have been forecasted that the age gap between the two was too significant to be targeted as one, but when looking at the outcome of the research, their bodies change in a similar direction with one another. And, if the designers target the appropriate BMI group, they can simultaneously target the trailing and leading-edge baby boomers at once. Apparel companies may think they need to target the groups separately, but the results show otherwise as they can be targeted as a united group.

Marketers' knowledge of the outcome of the measurements within this particular study could aid them in more impactful marketing toward the two groups of boomers, which in turn could drive sales. The boomers are willing to spend money on goods targeted toward them. Companies that know the boomers' measurements and perceptions will help aid them in targeting the market properly, as well as knowing the boomers do not have such a body image complex as first anticipated. The boomers, from this research study do not appear to be a difficult

market to target. They are fairly comfortable with their bodies and their mean measurements can be utilized by companies to view and understand.

Limitations

The sample size utilized in this study was limited. The women's measurements were in a pre-existing database. The average of the measurements was calculated based on the existing measurements but could change based on more women being added to the study.

Another limitation was the sample population chosen for the research. The women selected from the database were not diverse in all aspects. The subjects were all of Caucasian decent; this could have much to do with their measurements and the way their bodies are shaped. Research shows that the ethnicity of women can alter their body style/shape. For a non-bias survey, a collection of a more diverse population would be appropriate to gain a better understanding of the population, not a particular segment of the baby boomers.

The subjects also lived in the state of Michigan. This could play a factor into the size and shape of the women in the research study. Michigan is cold for many months of the year; this could possibly be related to the overweight and obese BMI categories.

Implications

Awareness that this particular baby boomer market is under-targeted is essential. Based on this, this study digs deeper into the target market and helps to understand their body measurements and body satisfaction. It was important to note at the beginning of the study that the market segment would be willing and able to spend money on apparel, without this, the study would not be as useful for apparel companies.

This can easily relate to the apparel industry. Familiarity with this research study can give designers a better understanding of apparel fit, along with merchandisers an understanding of their body image and satisfaction. Recognizing this portion concerning the baby boomers can help target this market with more information and can also give a glimpse of what this age group wants and needs. The spending power of the group is known, therefore, companies realizing this and taking action is crucial for increased sales amongst this group of consumer.

Recommendations for Further Study

Further study would include formulating a forecasting strategy for the two groups. For example, will they continue to grow in a similar pattern when the younger generations enter into this middle-age target market? More specifically, are the younger generations more knowledgeable and informed about diet and exercise? If so, how will this impact the measurements/post-survey body scan results of the future? In addition to this, further study could include researching companies that target this specific group of consumers and looking at if the companies target the trailing and leading-edge baby boomers together or separately. When this is found, the researcher could see the profit index of this attempt and take a deeper look at targeting the two groups as one entity, baby boomers.

Another recommendation for further study would be to include more measurements in the research. The bust, waist, and hip girth measurements are the three that were considered most crucial for the start of this study. However, looking at more measurements for the baby boomers' would provide an even deeper look into how the baby boomers' bodies are shaped. Understanding these three measurements was important for developing an overall assumption of the baby boomers' body but zoning in on additional measurements could provide an exact glimpse of the body for the apparel designer to work with. This study provides an apparel

company a directional strategy for targeting apparel fit for the baby boomers with the three areas of the body studied, but the more measurements studied would increase the scope of the study. Also, including more questions for the post-Survey questionnaire would be valuable. Body image and body satisfaction were measured, but items such as the effect of diet and exercise could lead to taking a more in-depth look at body image and body satisfaction. Further study on measurements could also help determine why the overweight and obese categories for this particular study had smaller body measurements as they continued to age.

REFERENCES

- Barak, B. (1998). The inner ages of middle-aged prime-lifers. *The International Journal of Aging and Human Development*. 46 (189-228).
- Connell, L. J., Ulrich, P. V., Knox, A., Hutton, G., Trent, N., & Bruner, D. (2003). Body scan analysis for fit models based on body shape and posture analysis. *National Textile Center Annual Report*, S01-AC27, 1.
- Davidson, T., & Longe, J. (2008). Body Mass Index. *The Gale Encyclopedia of Diet*, pg. 2.
- EBRI. (2012). More Americans entering poverty as they age. *EBRI Databook on Employee Benefits*, available at: [` 1](#)
- Flynn, J.Z., & Foster, I.M. (2009). *Research Methods for the Fashion Industry*. New York: Fairchild Books, Inc.
- Green, B. (2003). *Marketing to leading-edge baby boomers*. Nebraska: Writers Advantage, Inc.
- Grogan, S. (2008). *Body image: understanding body dissatisfaction in men, women, and children, 4-8*. New York: Routledge, Inc.
- Harkin, J., & Huber, J. (2004). *Eternal youths: How the baby boomers are having their time again*. London: Demos.
- Haynes, L. (2004). Baby boomers: Laura Haynes warns it's time to forget about youth culture and listen to the agenda-setting leadership generation-the 40-somethings. *Brand Strategy*, 179, 31.
- Hellmich, N. (2010). Baby Boomers by the Numbers: Census reveals trends. *USA TODAY*. Retrieved on April 3, 2012, from http://www.usatoday.com/news/nation/census/2009-11-10-topblline10_ST_N.htm
- Horne, L., Campbell, L., & Scholz, C. (2000). Older females as a market segment for well-fitting clothing. *Journal of Fashion Marketing and Management*, 3 (3), 236-244.
- Horovitz, B. (2011, November 16). Big spending boomers bend rules of marketing. *USA Today*. Retrieved from http://www.usatoday.com/money/advertising/2010-11-15-babyboomers-spending_N.htm
- Howarton, L., & Lee, B. (2010). Market analysis of fit preferences of female baby boomers. *Journal of Fashion Marketing and Management*. 14 Iss: 2, pg. 219-229.

- Howden, L., & Meyer, J. (2011). Age and sex composition: 2010. *United States Census Bureau*. Retrieved from <http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf>
- Hurd, L. (2000). Older women's body image and embodied experience. *Journal of Women and Aging*, 12, 77-97.
- Johnson, B. (2005). Half of boomers hit the 50 mark, but spending not likely to slow down. *Advertising Age*, 76(27), 18.
- Joung, H., & Miller, N. (2006). Factors of dress affecting self-esteem in older females. *Journal of Fashion Marketing and Management*, 10(4), 466-478.
- Moschis, G., Lee, E., Marthur, A., Strautman, J. (2000). *The maturing marketplace: Buying habits of baby boomers and their parents*. Connecticut: Greenwood Publishing Group.
- Myers, H., & Lumbers, M. (2008). Understanding older shoppers: a phenomenological investigation. *Journal of Consumer Marketing*, 25(5) 294-301.
- Nassis, G., & Geladas, N. (2005). Age-related pattern in body composition changes for 18-69 year old women. *Journal of Sports Medicine and Physical Fitness*, 43(3), 327-333.
- Norusis, M. (2002). *SPSS 11.0: Guide to Data Analysis*. Upper Saddle River, New Jersey: Prentice Hall Inc.
- Reisenwitz, T., & Iyer, R. (2007). A comparison of younger and older baby boomers: Investigating the viability of cohort segmentation. *Journal of Consumer Marketing*, 24(4), 202.
- Rowley, L. (2012, April 2). Baby boomers will transform aging in America, panel says. *Huffington Post, Post 50*. Retrieved from [//www.huffingtonpost.com/2012/04/02/aging-in-america-baby-boomers-ariana-huffington_n_1397686.html](http://www.huffingtonpost.com/2012/04/02/aging-in-america-baby-boomers-ariana-huffington_n_1397686.html)
- Sawchuck, K. A. (1995). From gloom to boom: age, identity, and target marketing. *Images of Aging: Cultural Representations of Later Life*, 173-187.
- Schofield, N., Ashdown, S., Hethorn, J., LaBat, K., Salusso, C. (2006). Improving pant fit for women 55 and older through an exploration of two pant shapes. *Clothing and Textiles Research Journal*, 24, 147-160.
- Smith, W. (2007). Older, not old: Boomers now face a reality they have long ignored and denied: aging. *Marketing Management*, 15, 52.
- Stern, L., & Heavey, S. (2012). Will baby boomers live as long as expected? Retrieved from <http://www.msnbc.msn.com/id/48676939/ns/health-aging/t/will-baby-boomers-live-long-expected/#.UD12OxzrQ28>

Sternfeld, B., Bhat, H., Wang, T., Sharp, T., Quensberry, C. (2005). Menopause, physical activity, and body composition/fat distribution in midlife women. *Med. Sci. Sports Exercise*, 37 (7), 1195-1202.

United Nations Population Fund. (2012). 2011 Annual Report Delivering Results in a World of 7 Billion. New York, NY: United Nations Population Fund.