HEALTH MEDIA IN THE GOLDEN YEARS: HOW AMERICAN SENIORS ARE USING MEDIA TO COMMUNICATE WITH HEALTHCARE PRODUCT AND SERVICE PROVIDERS

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ABSTRACT

HEALTH MEDIA IN THE GOLDEN YEARS: HOW AMERICAN SENIORS ARE USING MEDIA TO COMMUNICATE WITH HEALTHCARE PRODUCT AND SERVICE PROVIDERS

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The American population is aging, and as they do their healthcare needs are growing. Americans are among the largest populations of mass media consumers in the world per capita. The Internet revolution has added an entirely new dimension to media production and consumption while altering or supplanting more traditional media. Healthcare providers as well as product and service vendors are spending billions of dollars in advertising and informational campaigns as they vie for consumers while using new information and communication technologies to modernize healthcare delivery.

Given the previous statements, is the money and effort invested by the U.S. healthcare industry into modern media technologies actually reaching their largest target audience? Are American seniors receptive to these innovations? This study analyzes the current trends in healthcare communications, the related information available about senior citizens and media consumption, and presents a survey of uses of and attitudes towards healthcare informatics, technology uses, and technology adoption among middle class independent seniors living in a single community. The analysis of this data is to inform the choices of those seeking to reach seniors to influence their healthcare media consumption.

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KEY TO ABBREVIATIONS

EMR - Electronic Medical Record

HIT - Healthcare Information Technology

ICT - Information and Communications Technology

IT - Information Technology

SNS - Social Networking Site

TAM - Technology Acceptance Model

I) INTRODUCTION

A growing population of American seniors…

U.S. Census data and other available demographic information consistently indicate that the American population is getting older. The "G.I. Generation" or "Greatest Generation" of Americans who grew up during the Great Depression of the 1930s are in their twilight years and the earliest of the "Baby Boomer" generation that directly followed the post World War II economic expansion began entrance into the traditional retirement age of 65 this year.

Advances in medicines and immunizations, building and safety materials, and laws designed to ensure health and well being along with a host of other factors have precipitated humans living longer lives. Economic growth, particularly in the First and Second World, has led to the growth of the middle classes and a shifting of populations from predominantly rural communities to urban and suburban ones. This shift, when added to the relative freedoms that greater earnings provide and the lack of need for large families to aid in agricultural life has led to more and more urbanites having fewer and fewer children.

An aging American population having fewer children leads to the average age of our citizenry going up, and for many of the reasons mentioned prior this is happening faster than at any time in our nation's history. In 1930, America's senior citizens numbered fewer than 7 million, which was only 5.4 percent of the total population ("The Demographics of Aging," 2009). By 1990 the US Census estimated that 31.2 million Americans, roughly 12.5 percent of the total population, were aged 65 years or older. In the year 2000, almost 35 million had reached the age of retirement. Additionally, between 2000 and 2010, those Americans aged 45

to 64 grew 31.5 percent to 81.5 million, and now make up 26.4 percent of the total U.S. population (Hetzel and Smith, 2001).

The U.S. Census of 2010 showed that the number of retirement-aged Americans rose to over 40 million, an increase of 15 percent from 2000 totaling 13 percent of the current population. The rates of growth among older Americans are larger than younger populations, which have in turn risen the nation's median age from 35.3 in 2000 to 37.2 in 2010, with seven states having a median age of 40 or older. Currently, over 3.5 million Baby Boomers turn 55 yearly, and their swelling numbers have led the United Nations Population Division to predict that by 2012 America's population of those aged 50 years and older will reach100 million with 1 in 5 of all Americans expected to be 65 or older by 2035 (Howden and Meyer, 2011).

…combined with massive increases in healthcare spending…

In 1960, the average per capita expenditure on healthcare in the United States was $147 with a total national expenditure of $27.3 billion. In 2004, U.S. total healthcare consumption has reached $1.9 trillion, or 16 percent of the U.S.'s Gross Domestic Product (Stanton and Rutherford, 2005). By 2009 per capita health spending had reached $8,086 (17.6 percent of GDP) and a national spending on health of almost $2.5 trillion, an increase of 910 percent from five decades ago ("National Health Expenditures," 2010).

Currently, the 13 percent of U.S. citizens that make up our senior population consumes more per capita healthcare resources than any other age demographic. It is common knowledge that as we age, our healthcare needs increase in general. As an example of this, per capita healthcare expenditures in 2002 for those aged 19 to 64 was $3,352 per year, but for

seniors the average per capita costs were $11,089. Among those Americans bracketed in the top 5 percent for individual healthcare spending, those aged 65 or older account for 43 percent of their number (Stanton and Rutherford, 2005). Over $1 trillion dollars, or 36 percent of overall American health spending, went to the care and treatment of our retirement-aged citizens in 2009 ("US Healthcare Costs," 2011).

Senior Americans are more prone to chronic illness than any other age demographic; as of 2002 almost 75 percent of those aged 65 or older suffer from a chronic illness and roughly 50 percent of seniors have two or more chronic illnesses ("Preventing Disability," 2002). Chronic diseases such as cancers, diabetes, and asthma weigh disproportionately on healthcare expenditures. When multiple chronic conditions occur within the same individual, their individual treatment can cost up to seven times as much as an individual suffering from only one such condition (Stanton and Rutherford, 2005).

...and an unprecedented explosion in the diversity and availability of mass media…

The introduction of both the Internet and cellular communication and computing technology has fundamentally altered the world media landscape. In 2009, 74 percent of US adults were using the Internet and 38 percent of those aged 65 years or older (Rainie, 2010). Among Internet social networking users, the Pew Internet Project identified that 26 percent were of retirement age as of May 2010, an increase of 5 percent from September 2005 (Madden, 2010). Adult Americans are also increasingly communicating via text messages on their mobile phones. Although they text less frequently than younger generations, in September of 2009, 65 percent of mobile-using adults were texting, and by May 2010 that

number had reached 72 percent (Lenhart, 2010). In addition to these trends, Pew Research found that only about 15 percent of the American public was "Off the Network", or neither using cellular phones nor the Internet (Horrigan, 2007).

228 million Americans ages 13 or older have a mobile phone, which is over 74 percent of the total population. 31 percent of these mobile subscribers use Smartphones, and over 83 million mobile and Smartphone users use the Internet from those devices ("Factsheet," 2011).

The "traditional" electronic media of radio and television are ubiquitous mass communication devices throughout the world. Radio rates of penetration in the Industrialized World (Western nations, Oceania, and advanced Asian nations) is 100 percent, with over 5 radio receivers per household and over 2 radio receivers per capita. Radio in the emerging world can be found in every household with electricity, with an average of 1.5 radio receivers per household (Ahonen, 2011).

Cable television is endemic to American households; the A.C. Nielsen Company asserts that 99 percent of US households have at least one television. ("Television & Health", 2009) In 2006, 73 percent of Americans 65 years of age are older viewed television not as a luxury, but as a necessity. 50 percent of them saw cable or satellite television as a necessity ("Luxury or Necessity", 2006). 98 percent of homes in the Industrialized World possess at least one television with a viewing rate of roughly 88 percent of the total Industrialized population. Among emerging economy nations, 73 percent of households possess at least one television. 2.6 billion people, or approximately 50 percent of all households on Earth, have access to either cable or satellite television (Ahonen, 2011).

...has created the need and ability for new ways of communication between the healthcare industry and senior citizens.

The above three general points (an aging population combined with increased healthcare spending/consumption and greater access to media) suggest that our aging, potentially ailing, population will be in a position to communicate with each other and healthcare product and service providers in new and numerous ways.

But how are these product and service providers trying to address this growing market? The slice of the American economic pie going to the healthcare industry is large and growing rapidly. Half of the twenty fastest-growing jobs being created are in this field. In 2008, this sector employed 14.3 million Americans and by 2018 it is projected that another 3.2 million jobs will be created there ("Career Guide", 2011). As noted earlier, nearly 18 percent of U.S. GDP, or $2.5 trillion, goes into the healthcare sector. This number includes all of the typically understood costs, such as hospitals and physicians, medicines and drug research, and outpatient care of many varieties. Also included in this price tag is the spending on medical advertising, information dissemination, and Healthcare Information Technology (HIT). Illustrated below are three examples (telemedicine, Electronic Medical Records, and online prescription filling) healthcare trends that incorporate new communications technologies.

Telemedicine is the rendering of healthcare at a distance through the use of ICT. For rural populations, elderly living at home or in assisted living situations, travelers' abroad and tech savvy consumers, this allows for the possibility of near-instantaneous communication with healthcare professionals. Many new telemedicine initiatives exist within healthcare groups, product vendors, and public-private partnerships between hospitals and the populations they

serve. Two potential downsides of this push for distance medicine are the reliance of new technologies in their delivery and the possibility of misdiagnosis and negligence by an unaccredited or unqualified provider.

Electronic medical records (EMRs) are a slowly developing set of systems that have been creeping into common medical practice for decades. Among the hopes of transferring patient records into a digital format is streamlining communication between doctors, medical specialists, pharmacists and other professionals. Another potential benefit of this information portability is the increased ease of patients to obtain a complete and constantly updated version of their own medical records. This task has proven to be in many cases a perilous one. From individual insurance billing codes and practices to difficulties in consolidating the disparate ways in which the offices of individual doctors track their patients, any unified system of electronic medical recording seems at best a distant reality.

Purchasing medications online is another patient option provided by the expansion of the Internet into our everyday lives. Although generally seen as a safe and more cost effective means of securing prescription drugs when contrasted to traditional local pharmacies, concerns exist about the quality of mail-order medications and about the overall effect of US dollars going to foreign drug distribution networks not necessarily subjected to the same oversight as domestic pharmaceutical supply chains.

How our older populations communicate with and within the healthcare community, and how new technologies currently influence this, is the focus of this research. Healthcare vendors and providers are seeking a synthesis of traditional care and new media solutions for the aging populations' growing healthcare needs. This synthesis, however, is far from seamless.

This research study developed from a personal anecdote in regards to the difficulties with adoption of in-home HIT. An aging family member recently went through a serious and impairing medical trauma, leaving them in need of a higher degree of medical interaction than was previously required. After an initial hospitalization, reintroduction to the home and in-home therapy began. Along with this process, medical in-home observation and communication technology was recommended and brought to the patient's residence for installation. The device consisted of an alarm clock to notify the patient to take their morning medications, a scale, a blood pressure cuff, and a glucose monitor along with the necessary technology to record this data. Then the data was to be relayed daily to a medical professional for interpretation.

This device was installed by a physical therapist that seemed unsure of the technology she was responsible for, and the installation was eventually aborted after it was ascertained that the device needed a standard landline phone jack to operate. My relative had "gone wireless" for their phone needs years before and received both television and Internet through a cable provider, so no operational landline was available. The devices available for medical communication in this instance had no cable or wireless alternatives, nor had there been any questioning prior to the device being brought into the home as to the issue of connectivity. Furthermore, there were no medical insurance allowances to the activation of a landline for the purpose of using such a device. After this information came to light the device was removed and my relative was instructed to record these medical data points in traditional manners and give the information to their physician when face-to-face meetings were called for. Doctor visits are far from a daily occurrence, so the data would not be received in nearly as timely a manner as the HIT would have allowed for.

This example of the growing pains of healthcare ICT has several dimensions. First, there is the divide between new technologies that the healthcare industry is pouring money and research into and the level of acceptance of seniors towards this technology and their perceptions of its necessity, creating a new "digital health divide" between HIT and those who might benefit most from it. Also, there seems to be a deficit in the targeted marketing of these new communication technologies to an elderly audience and of their level education on its uses. Lastly, do retirement-aged Americans feel any deficits in their traditional models of healthcare? Is the industry engaging in the error of trying to create a set of services where there is no eagerly receptive consumer base?

II) RELATED WORK

A) Healthcare Information Technology

With regards to in-home care telecommunications, Jimison et al. (2008) found that in-home healthcare IT was generally successful in producing positive outcomes when their existed what they refer to as a "complete feedback loop" consisting of regular monitoring of patient status, the interpretation of this data on an individualized basis, quick adjustments to care as indicated by the interpretation of the received data related back to the patient, and repetition of this cycle in routine intervals.

Poon et al. (2006) discovered that the adoption of healthcare IT that expressed a direct financial (healthcare savings) benefit to the patients studied far exceeded adoption that showed improved quality of care and patient safety alone, indicating that the cost of healthcare weighs more heavily on the patients in many instances than the actual efficacy of the treatments implemented. Furthermore, their research showed a very limited interest in "ambulatory electronic health records" (electronic medical records) or in the improvement of communication between patients and physicians as well as concerns about the impact on the healthcare industry's productivity with the adoption of the new communication methodologies.

Schaper and Pervan (2004) studied Australian therapists in relation to the Technology Acceptance Model (TAM) and theories of planned behavior and found among their population little statistical support for these theoretical models. This indicated to the authors that there were some "fundamental differences" between healthcare professionals and the typical populations of study in these models, which were generally selected from the business and

academic communities. Although the researchers indicated that the population saw HIT as an asset in the implementation of effective healthcare treatments, it was being underutilized in general and in particular by rural segments of the population who might benefit most from the remote viewing and analysis possibilities provided by the technology.

B) Healthcare Information Gathering

Tu and Cohen (2008) noted the dramatic increase in information seeking by all segments of the population using all available methods of gathering healthcare information between 2001 and 2007. Although this timeframe correlates with and is primarily driven by the rise of Internet use in particular, the increase in healthcare information seeking was also seen in every other mode of media consumption. Furthermore, the researchers found that throughout the timeframes studied the single most predictive indicator for personal healthcare information gathering was the level of education of the individual. Of the sample they studied, 72 percent of participants with a graduate degree sought healthcare information out themselves, versus 42 percent of participants lacking a high school diploma.

Among their elderly study participants, Tu and Cohen saw an almost 250 percent increase in healthcare information seeking by means of the Internet. This population segment, however, are still far less likely to use the Internet to this end than their younger counterparts: 18 percent among senior citizens versus 36 percent of the 18 to 49 years aged population. Additionally, the research indicated that over 50 percent of adults of all age ranges would later speak with their healthcare professionals about the information they had obtained through their own information seeking.

Fox (2007) looked at populations who are living with chronic conditions and contrasts them with populations who do not suffer from chronic conditions, with some interesting results. In large-scale studies of various American populations, it is typical that roughly 20 percent self-identify as suffering from a chronic condition. Of elderly Americans, 29 percent in a 2006 Pew Internet & American Life study identified themselves as living with a chronic condition. However, a Centers for Disease Control and Prevention and Merck Company Foundation study estimated that 80 percent retirement-aged Americans live with at least one chronic condition.

Individuals of all age ranges who identified themselves as living with chronic conditions were 23 percent less likely to use a computer in their home, work, or school life. 49 percent of the study populations with chronic illnesses do not use e-mail or the Internet at all. Among the chronically ill who are Internet users, 86 percent have searched online for health information. These online healthcare information seekers with chronic illnesses indicated that they used the information gleaned from the Internet to ask their physicians new questions about their health, or ask for a second opinion 69 percent of the time. Additionally, 75 percent of them indicated that their last information search actually affected medical decision about how they treated their illnesses. This is a full 20 percent higher than those seekers who had no chronic illness. Furthermore, a majority of Internet-connected chronic disorder sufferers used the information they obtained online in pain management (57 percent) and in changing their approaches toward exercise, diet, or stress management (56 percent). The author also notes that although many who suffer from chronic diseases are using the Internet to gather health information, they are not necessarily properly sourcing or assessing the value of the information

the retrieve; many fail to check the credentials of the sites which the information is obtained from or assess the dates which the information was published.

Though many American seniors live active and health lives outside of medical advertisements, Friedman et al. (2009) studied the relation of how different forms of media were or were not informing their knowledge of issues relating to brain health and cognitive issues. The resulting focus groups indicated television as being a primary method of healthcare information dissemination, and that this medium of mass communication had offered little to the participants in discussions on brain health. The participants brainstormed for possible methodologies to increase awareness of brain health issues, and they developed several media strategies: radio campaigns, flyers and brochures that could be taken home and discussed with spouses and family members, and community health bulletins and seminars. The one entirely overlooked component among the focus group members, and of particular interest to those in the healthcare communication field, is online and mobile communications. The study participants never mentioned HIT, and it would appear that the researchers asked no questions regarding it.

Beard and Williamson (2010) looked at differing political strategies of the various senior rights movements, whom have all ostensibly been fighting for the social and economic benefit of seniors. As opposed to the perception of "productive aging" that many healthcare advertisements and large senior product/service providers such as the AARP have put forth, many rights organizations have, though their efforts to lobby and educate, produced a much different impression. Two unintended results of their efforts have been to portray their movement as a "largely defensive approach rather than a concerted offensive for social change"

and to reinforce "public portrayals of seniors that both diminish the social perception of their needs and homogenize their experiences of aging."

These senior rights movements counter that they are combating this overly sunny representation of their constituents. They claim that the paradigm of portraying seniors as no different than other societal segments undermines the need for public health information dissemination of the differences in physical and cognitive wellness that seniors must be conscious of. Examples they give include the reductions in mobility many seniors suffer from, the statistical tendency for older American to be less literate, particularly in technological matters, and the existence of mental disorders that largely affect aging populations, such as Alzheimer's disease. These rights movements note that those suffering from many of these conditions go largely unseen in media and advertising, and much to the contrary the portrayals of seniors by mainstream lobbying and service providers such as the AARP or the ARA are of working, active individuals.

Fox (2011) reports that a survey study found the 18 percent of respondents have consulted online sources looking for those who share their particular health-related issues. Of those with chronic conditions or those involved in a recent medical emergency (either suffered by themselves or someone close to them), 23 percent have searched online for those with similar ailments. 26 percent of caregivers attending to the needs of an ailing relative or friend and are also Internet users have consulted online sources for the accounts of other persons who have had similar healthcare concerns.

Of course the vast majority of healthcare advice is given offline. Fox notes that only 5 percent of adults received suggestions or information from a healthcare professional online. 5 percent reported online interactions with other patients, and 13 percent had online

interactions with family or friends on healthcare issues. The national survey also indicated that in both online and offline communications, healthcare professionals were the preferred contact for questions of a technical or specific nature, while patients, family, and other non-professionals in healthcare were the preference when searching for information of a more personal nature, such as how to cope with a particular condition or treatment regimen. Fox refers to a 2007 Association of Cancer Online Resources study that found that these online informational exchanges were a combination of the two: while technical information was sought more so than emotional support, both were fundamental to the maintenance of these communities.

In 2000, Fox and Jones (2009) show that 25 percent of adult American adults consulted online sources for healthcare information. By 2009, 61 percent of American adults had searched online for health information and that over half of those inquiries were of behalf of someone else not conducting the search. In equal numbers (38 percent), those who consult the Internet for healthcare information indicated that a recent online search affected a decision about seeing a doctor or changed the manner in which they dealt with a chronic condition.

Those adult "e-patients" who have sought out online health information for themselves are more likely than those who have not (when controlled for education, age, and other extraneous variables) to have blogged or read other's blogs, logged into a social networking site like Facebook or MySpace, used a status updating service such as Twitter, or consulted an online encyclopedia such as Wikipedia.

For example, Fox and Jones indicated that 53 percent of Internet users who search for healthcare information online have also consulted Wikipedia, compared with 17 percent of Internet users who do not search for online health information. Online healthcare information-

seekers are also over twice as likely to use common social networking sites such as Facebook and almost four times a likely to read someone else's blog postings or use Twitter. Age, however, is seen as one of the best predictors in the use of social media, and older Internet users have been slow in their adoption. Among Internet users aged 65 years or older, social networking sites such as MySpace or Facebook are only engaged with 7 percent of the population. Updating services such as Twitter see only a 2 percent rate of adoption by retirement-aged Americans.

Fox (2011), in reviewing Pew Internet surveys, notes that seeking health information is the third most popular online activity in total among all age categories. Among "Older Boomers" (aged 57-65) who use the Internet, 83 percent seek out healthcare information online. 73 percent of the "Silent Generation" (aged 66-74) of online information seekers looks for healthcare information, while among the ""G.I. Generation" of those 75 years or older who surf the web, 69 percent have sought out health information.

The Pew Research Center's Internet & American Life Project survey of 9 August to 13 September also delved into the particular types of health topic information searches made by the different age categories. 62 percent of retirement-aged Americans had made inquiries about specific diseases and medical problems, while 55 percent of them sought out information on a particular medical procedure or course of treatment. They searched for information on particular doctors or hospitals much less frequently than the younger survey respondents did, and surprisingly were three to four times less likely to search for information about end-of-life decisions than younger participants.

Fox (2011) found that adult caregivers who use the Internet and are currently caring for a loved one are 16 percent more likely (70 versus 54 percent) to seek out healthcare

information online than Internet-using adults who are not a caregiver. Additionally, caregivers for ailing persons are more likely than many other groups to use online social networking tools for healthcare-related information seeking; 20 percent of caregivers indicated that they used social media for this, compared to 12 percent of other users. This discrepancy also directly maps onto persons with at least one chronic condition, with 20 percent of them using social networking sites to seek out healthcare information, compared to 12 percent for those no suffering from a chronic condition. For disabled persons, the rate of information seeking about healthcare from social networking sites is 23 percent, compared to 13 percent for those who are not disabled.

C) Technology Adoption

Ebrahimi, Singh, and Tabrizi (2010) looked at cultural dimensions in relation to the adoption of new technologies, and found significant positive correlations between them. Of particular interest to the study of elderly populations is the cultural dimension referred to as "Uncertainty Avoidance" by the authors and its relationship to the "Behavioral Intention" to adopt new technologies. Uncertainty avoidance is the principle that an individual will shy away from engaging in an activity where the outcome is unknown. The authors argue that as age increases, uncertainty avoidance in relation to the adoption of new technologies grows. This, the authors assert, is due in large measure to older study participants exorcizing more caution in their decision-making and their predisposition to being more risk averse.

For many seniors, concern is expressed towards ICT and possible breaches in their privacy. Courtney (2008) researched the relationships between privacy considerations of older

persons and the benefits of in-home medical IT. Using focus groups and individual interviews, the study indicated that privacy concerns were a primary barrier in the adoption of HIT in a home setting. This concern centered around the perception that the participants' medical information would be at risk of becoming more public than if their care were to remain human-focused between them and the healthcare professionals who interact them. There was in the participants a general desire to control the content of the personal medical information released and to have some influence on whom can receive that information.

This suggests that the impersonal nature of Smart Home and other HIT methodologies led to a belief that their personal medical information was being more widely disseminated than through more traditional methods. The need by the participants for clear boundaries between public and private spaces was indicated. The study suggested that individual and community-wide information initiatives could be successful in overcoming these privacy concern barriers.

Lenhart (2010) writes that in a 2010 Pew Research survey, 57 percent of all adults aged 65 and older possessed a cell phone. This represents the only group of Americans with a statistically significantly increase in usage when grouped by age. Younger age groups may be nearing the saturation rate in the adoption of cellular technology, but retirement-aged Americans were slow adopters and therefore show higher adoption rates in current surveys.

Zickuhr (2011) notes that desktop computing is particularly popular with those aged 35 to 65. 69 percent of those in "Generation X", 65 percent of younger "Baby Boomers", and 64 percent of older "Boomers" indicated they owned at least one desktop personal computer.

Cell phones are the most popular form of modern communications equipment among all age segments of society. For older adults, 84 percent of 57-65 year olds possess one, 68 percent of 66-74 year olds have a cell phone, as do 48 percent of those aged 75 and older.

However, 43 percent of Americans aged 75 years or older own no computing devices whatsoever, including cellular phones.

In using cell phones for purposes other than making and receiving calls, there is an inverse relationship between the age of the user and the number of additional cellular phone functions that are utilized. 49 percent of mobile phone users aged 57-65 send or receive text messages. The 66-74 age range see a drop to 27 percent, while only 9 percent of cell phone users 75 and older use texting. Accessing the Internet with their cell phones occurs with much less frequency; oddly the 66-74 age range accessed the Internet with their phones slightly more frequently than those aged 57-65 at 17 percent and 15 percent, respectively. Only 2 percent of those 75 years and older used their cell phones to connect to the Internet, although 7 percent of them indicated that they had sent or received e-mail messages through them.

Rainie (2010) - A Pew survey in late 2009 indicated that 38 percent of respondents aged 65 and older were Internet users, and 26 percent had broadband in their homes. 16 percent of this demographic had accessed the Internet through a wireless device, be it either by laptop or by Smartphone.

Mordini et al. (2009) were studying the possibilities of "e-inclusion", or access to ICT, for elderly persons in the European Union. Through mandate, funding structures, and ethical guidelines established by EU officials, ICT inclusiveness has become one of the key components in a unified Europe. As the world speeds towards a new digitally integrated frontier, many groups could be left behind for a variety of reasons. This idea is commonly referred to as the "digital divide" - a divide between those with the resources, education, and social elasticity to engage in these new methods of communication and those who do not.

The authors identified one of the largest factors standing in the way of this "e-inclusion" of European seniors was the reluctance of businesses to employ older workers. In an industry survey reviewed in the study, employers in technology fields expressed a disinclination to hire workers over the age of 40. Along with the perceptions of employers that older workers will be less tech savvy, little work has been done to provide technological solutions for inclusion of older persons into the fold of users of these new technologies. The educational aspects of workers educated before the computer revolution as opposed to after, and the higher levels of technological anxiety among them are two factors. Beyond these are the actual physical limitations, such as diminished sensory capacity, which have implications not only to programmers and web developers, but to hardware and interface designers as well.

One solution indicated by the authors is seen in the rise of ubiquitous computing. As sensors, processors, interface devices, wireless technologies, and ambient computing systems become more subdued within an older person's environment, the anxiety about them diminishes. This "out of sight, out of mind" method introduces ubiquitous computing circumvents much of the difficulties seen in technology acceptance by senior populations. There is, however, no indication that any general technological anxiety of elderly populations will abate as computing technology moves into the background of everyday life. As the authors assert, "once such technologies are embedded within an environment, they do not usually give the user an opportunity to decide whether or not to make use of it." This lack of choice could feed into or reinforce existing anxiety.

There is a certain temporal auto-correction at work here, as there has been throughout human history. As a new technology takes root in a society the users of that technology naturally age, and that technology becomes embedded in that society as elders pass on their

knowledge to younger generations. This is what the authors refer to as the demographic element. The globalization and migration element comes into play as family groups find themselves geographically distant from one another. At no other time in human history has this possibility been more fully realized than now. As family units disperse, typically for chances at greater economic opportunity or to escape local oppression, their desire to communicate with one another remains. ICT is then a natural fit for these family units, and as the older generations within the family are also typically the least likely to be physically mobile, their need to rely on ICT to keep in touch with their family grows.

The authors also address the viral and financial aspects of ICT penetration into older age groups. As older individuals adopt a particular new gizmo or piece of ICT, such as a cell phone or desktop computer, their chance of adopting an additional or supplemental piece of technology increases. This viral trend can led to older people going online, e-mailing, texting, etc. As populations age, particularly in first world societies, their market share and financial muscle as a percentage of the overall population grows. This inevitably leads to new marketing opportunities. As older persons begin to consume ICT, the overall costs of both production and consumption lowers as demand rises. All of the above-mentioned factors support the trend we have seen in the United States of older populations gradually adopting ICT in greater numbers.

Ariyachandra, Crable, and Brodzinski (2009) note that ICT bundled into medical assistive devices, financial transactions, general communications and mass media, and personal/home security has "the potential to greatly enhance the lives of the elderly who are computer savvy." Their review of Pew research indicated the senior citizens who are using the Internet, although small in number when compared to elderly who do not go online, exhibit

some interesting characteristics. These include a greater likelihood of being male, married, better educated, and more affluent than their age counterparts who are not enjoying online connectivity. Furthermore, Internet-using seniors are more frequent users than the average for all age groups; with 69 percent of them going online daily, compared to 56 percent of all Internet-using age populations.

> "The receptiveness of elders to computers and the Internet is well demonstrated in the following research which compared computer literacy and perception of both young adults and older adults after a computer training session. Findings indicate that older adults were less computer anxious, had more positive attitudes toward computers, and had more liking for computers than younger adults. Additionally, for both younger and older adults, higher levels of computer experience were associated with lower levels of computer anxiety, and a more positive attitude toward computers." (p. 326)

Seniors typically possess more discretionary income and time to devote to hobbies; increasingly among them is spending time online. Additional studies have shown that increased Internet use can positively influence the sense of well-being and level on interpersonal communications for elderly web-users. Surveys have indicated that almost 20 percent of Canadian seniors have engaged in online social networking, primarily to connect with younger family members.

In qualitative interviews with elderly persons from a senior recreation center who both were and were not working with computers, using semi-structured questions, the Authors

asked about the uses, benefits, and challenges of computer use by themselves and that they noticed among their peers. Typical uses included e-mails to and from family members, photo sharing, and genealogy searches. Noted benefits included keeping seniors interested and active; particularly in current events and on health matters. Challenges that were emphasized included technological anxieties about computer technology and physical problems associated with use of ICT by the elderly, including eyestrain and keyboard/mouse manipulation.

Calvert, Kaye, et al. (2008) surveyed hundreds of senior citizens from both rural and urban areas, who were at least 85 years of age and were neither suffering from any forms of dementia nor any significant function-impairing cognitive disorders. The matter of the survey was the use of not just computers and the Internet, but of common electronic household devices of many types. Understandably, the most common ICT device used in both urban and rural households was the television. Of interest, however, was that there was no statistically significant difference between rural and urban households in their use of almost any technology, from microwaves to answering machines to DVRs.

Of computer use, 36 percent of their respondents had used a computer, and 33 percent had one in their homes. 18 percent of those surveyed used a computer on a weekly basis or more frequently. Among those, the three top activities they engaged in on their computers (in order of frequency) were e-mailing, playing games, and surfing the Internet. Almost 58 percent of the Internet users regularly searched online for health information. The study did indicate slightly lower levels in Internet use among the rural elderly than their urban counterparts, but lower average income and educational levels in rural areas accounted for most of this discrepancy.

Seniors who begin to engage with the Internet face greater challenges of acceptance than younger generations who have had this technology in their lives for a larger percentage of their overall lifetimes. The Technology Acceptance Model as refined by Bagozzi, Davis, and Warshaw (1992) shows that adapting a new technology is more than a causal connection between the implementation of technology A producing desired effect B. There are challenges in adopting technology that include, but are not limited to, the background and education of the potential technology user as well as the perception of usefulness leveraged against the learning curve in adoption of the new technology.

In support of the usefulness of the TAM in relation to Internet applications, Lederer, et al. (2000) found that the ease of use of an Internet application is predicted by the ease by which the application could be located online as well as the ease by which the application could be understood. In addition, the perceived quality of the information obtained is an accurate predictor of that particular website or online application being revisited. Thus, ideas on "Ease of Use" and "Usefulness" of Internet applications positively correlate with TAM theories.

D) Media Habits

Dahmen and Cozma (2009) studied the habits of adult traditional media (newspapers and television) consumers, and in particular the largest generation in American history, known commonly as the "baby-boomer" or simply "boomer" generation, who are poised to begin entering the age of retirement this year, in addition to those who have already entered retirement. This media study is compared to facts known about senior health and activity levels and how those or represented (or not) in traditional media. They found that those in the 45 to

74 age demographic are they most loyal readers of newspapers, and that many of these audiences typically turn to more televised news sources when their eyesight begins to fail them. This age group has the greatest likelihood of reading a newspaper from front to back, which had the effect of exposing them to a topically wide range of content. Juxtapose this with the radically different "grazing mentality" of younger news seekers, who are used to skimming news websites and content aggregators for particular items of interest.

Television, the authors assert, is most popular among the oldest segments of our society. In addition to the ease of use and the relative ease on the eyes when compared to newsprint, television frequently replaces social contacts that are lost from the natural results of the aging process, being predominantly inhibited mobility and the death of peers. Over 70 percent of older television viewers have reported that they consider this technology either a "moderate" or "strong" companion.

However, the average older American television viewer, in their 4 hours, 39 minutes of daily watching, rarely sees older television personalities. The typical television personality, whether in news, sports, or as an actor, is far younger than them. "As characters age," the study asserts, "they lose importance, value and effectiveness. Visibly old people are almost invisible on television." Although cable and network producers and programmers have an interest in filling shows with younger personalities, television advertisers are acutely aware of their older audiences and that an average viewing day will expose them to approximately 100 advertisements. Therefore care is taken to address senior citizens' particular consumption patterns. The most accessible evidence of this is in television medical and drug advertising, where conscious effort is applied to show senior citizens as active and enjoying their lives, ostensibly due in part to the advertised medication. This reflects the reality that 80 percent of

elderly Americans are in good enough health to enjoy normal activities, and 64 percent of those indicate that they suffer from no limitations from the performance of major activities.

As for ICT that is widely used and enjoyed by seniors, Madden (2010) showed that e-mail remains the primary Internet communication tool for older Americans. 89 percent of Internet users aged 65 and older employ the technology and over half of them read or send an e-mail on a daily basis. From 2009 to 2010 the number of Internet users aged 50 or older that used online social media rose from 22 percent to 42 percent. Delving deeper into those numbers, 47 percent of pre-retirement age older Internet users (ages 50-64) are now using social media and 26 percent of those Internet users aged 65 and up are engaged with social media. The vast majority of younger Internet users are already using social media; 86 percent of 18-29 year olds have added social media sites to their Internet media mix.

This discrepancy has led to higher growth rates among the lesser-represented older age groups. Popular social networking sites such as LinkedIn and Facebook saw an 88 percent rate of growth among users aged 50-64, and a reported 100 percent growth rate among users aged 65 and older; comparatively, the already-connected 18-29 year old demographic saw a growth rate of only 13 percent.

Madden shows that the lower percentages of overall usage of social media by older populations in compared to younger ones is not merely a function of the slow adoption of new technology by a group who have spent the majority their lives without it, but that it is also a question of connectivity. Retirement-aged Americans (65+) are among the least likely groups to have access to the high-speed Internet access that foster the ubiquity of online social networking. Although only 31 percent of retirement-aged Americans have broadband access from their homes and they are among those least likely to see themselves at a disadvantage for

not possessing it, those who do have it are very likely to use their Internet connection on a daily basis. 72 percent of them use the Internet daily, compared with 77 percent of those aged 50-64 and 86 percent of those aged 18-29.

Social networking among the elderly also directly equates to healthcare information. Older persons are far more likely to suffer from chronic diseases than other age groups. For older Americans who use the Internet, many of which suffer from chronic disease, their participation in blogs, online discussion groups, and e-mail listserv tools dealing with health issues dramatically increases.

Horrigan (2007) asserts that as of 2007, 15 percent of the total adult population, made up primarily of older Americans, were "off the 'net", or had no experience with online searches or activities of any kind. This 15 percent also did not possess a cellular phone. They display an overall contentedness with traditional media and tend to have little interest in learning the use of new communications technologies. These people are typically in their 60s (with a median age of 64), predominantly female (57 percent), and tend to hail from lower economic and educational backgrounds. If they possess any digital technology, they use them for more homebound purposes, such as taking digital photographs to display them at home on their computer monitors as opposed to sharing them or posting them online.

Not surprisingly, this group reported relatively low worry about what is commonly referred to "information overload"; 34 percent of them indicated that they felt the pressures of being exposed to too much information, a percentage slightly above the societal mean, but far lower than many other population segments that were connected to the Internet or possessed cell phones. This group did indicate that they did not think that technology gave them any

additional control over their own lives more so than over groups, with 34 percent of them believing technology gave them greater control, compared to the societal mean of 48 percent.

III) RESEARCH QUESTIONS

How our older populations currently communicate with and within the healthcare community, and the new technologies influencing this, is the focus of this research. Media use in an individual's quest for healthcare information has expanded beyond the one-way communication afforded by television, radio, and print media. Likewise, new media is influencing the coordination of care among aging Americans.

Additionally, many new healthcare initiatives involve social media, and newer still the incorporation of text-capable phones and Smartphones. I wish to address whether this tactic is perhaps missing the single largest demographic consumer of healthcare services, and why that might be the case.

Analysis of the data received from the distributed survey, along with research of the information available within the field, seeks to address the following research questions:

RQ1) What forms of media (new and traditional) are older Americans using to address their healthcare concerns and needs?

Health advertisements from service providers, drug manufacturers, and device vendors arrive to seniors through all forms of mass media. Which ones are effective? If an advertisement of piece of healthcare information comes to a senior citizen through a particular venue, is it more likely to be responded to? What are the typical means in which seniors respond to these health-related ads?

RQ2) At what rates are older Americans adopting/using new media in relation to their healthcare concerns and needs?

Previous research has given much insight into how retirement-aged persons adopt and use new mass media tools. Taking a sample of seniors, will these findings hold with our new population? Do they seek out health information in the same manners, if at all?

RQ3) What are some general barriers to older Americans in the adoption of new technology?

What inhibits senior citizens from adopting new technologies, if anything? Has there been adequate information or training with these new tools? Do they possess a sense that these new technologies are of use to them?

RQ4) How are older Americans learning to use new media and technologies?

When retirement-aged persons begin to use new media technology, how to they learn to do so? Do they rely on vendors, peers, of younger family members? At what rates to they educate themselves on using new media?

RQ 5) Are particular age ranges of older persons more or less likely to adopt, reject, or utilize any particular form of media in their healthcare communications?

Are younger seniors more likely to use new informational technologies, and older individuals less likely to?

RQ 6) Are healthcare providers and vendors addressing both the needs and the interests of the retirement-age community?

Are seniors concerned with record portability and access to their medical histories, as younger demographics might be? Do seniors sense any discrepancies in the availability of healthcare professionals and their ability to secure contact with them?

IV) METHODOLOGY

A) Population

For this research study, a population was selected from a mid-sized town in Western Michigan. All of the participants live in a single retirement condominium community. The community consists of both apartment-style dwellings that number four to a building, and of single-family style dwellings connected by either a common wall along the main room or a connected garage to the adjacent homestead. The rules of the community state the deed-holders must be of at least 55 years of age, which insured that the inhabitants would be within the ranges of age that the research study relates to. In particular, ages ranging from 61 years and upwards were desired.

That this population lives in their own dwellings suggests that the average participant in the study is of sound enough mind and body to maintain an independent residence, with perhaps some aid from family, friends, or outpatient therapists and social workers. Assisted living facilities and nursing homes might not yield as diverse a population, as many of their potential media outlets (such as newspapers, magazines, and television) are obtained through the facility in which they reside, and often they reside in these facilities due to physical or mental conditions which may adversely and disproportionately affect their media consumption.

That the selected population owns their own residences in a solidly middle-class community also suggests that they would not be among the lower socio-economic or educational classes. This leads to the assumption that their media use and technological savvy

would roughly correspond to other regional and national studies dealing with seniors in similar social and economic settings.

B) Survey Distribution and Collection

Distribution of the survey occurred by placing the survey instrument at the front doors of a total of 72 dwellings, chosen in no particular order and with no preference of type of dwelling unit. Initial distribution began on 14 October 2011, with a second round of surveys being distributed on 2 November 2011. The survey instrument was folded and placed upright within a self-addressed envelope stamped with the appropriate postage for its weight. Placed upright and unfolded in the envelope in front of the survey was an introductory letter explaining the rationale for the survey as well as informing them of their rights as a study participant and giving them the necessary contact information should there be any additional information needed by the participants.

Receipt of the surveys occurred via the U.S. Postal Service, and as there was no space or need for the participants to include a return address, none were. Thus participant anonymity with all returned surveys was assured. Of the 72 surveys distributed, 41 completed surveys were mailed back, giving the survey a participatory response rate of 57 percent. This is within the expectations for a survey of this type among the population in question, but generally much higher than an average expected response rate for non-incentivized mail-in surveys among general populations, which varies according to the source consulted but typically falls between 1 and 20 percent.

C) Survey Instrument

Approval for the research and survey instrument was obtained on 10 October, 2011: IRB#x11-866e. The survey itself consisted of 44 questions. The first section of the survey, consisting of 6 questions, asked demographic questions: Gender, Age, Race, Level of Education, Relationship Status, and Employment Status. Age was segmented into 3-year increments beginning with ages 61 and younger and ending with ages 86 and older. The rationale for this was to narrow the time ranges right before and after the traditional retirement age of 65 in hopes of gauging what effects, if any, that threshold had in the responses received. Those turning 65 years old this year, having been born in 1946, are the first of the "Baby Boomer" generation. This is the first American generation who grew up with television, which could potentially influence their adoption of that and other technologies. Similarly, educational level of attainment, the presence of a spouse, and current employment status information was requested to ascertain if these factors influenced the participants' responses.

The following eight questions assessed the participant's use of different forms of media, in both the possession of a particular device and the frequency that a particular media outlet was used. Frequency was arranged on a five-point Likert scale, ranging from frequent use to infrequent use with the middle selection being no opinion or not applicable. The questions included the use and frequency of newspapers and magazines, television, and radio. Additional questions centered on cellular phone and/or Smartphone use for voice, text, and Internet activity. These questions paint a broad portrait of the participant's media landscape; informing the questions to follow as well as yielding data for comparison to related works and statistics about media consumption.

The next four questions assessed the participant's general level of interest in new technologies. Inquiries were made about whether or not the participant felt they had the time and interest to learn about new technology, whether the participant felt intimidated by new technology or not, and if they would have any interest in attending classes to learn about new technology, were they local and available. Answers were again arranged on the five-point Likert scale, ranging from strong agreement to strong disagreement with the middle ground being no opinion or not applicable. The answers obtained to these questions would shed light onto feelings the participant has about new technology and could be used in comparison to information already available from related studies and known trends in technology adoption.

The four questions following the assessment of interest and anxiety asked what the participants are using various media devices and tool for. Questions about phone, e-mail, the Internet, and social media websites were asked. The possible answers, which were not limited to a single choice (choosing none of them was also an option), were to keep in touch with family and friends, to get local and national news, to conduct business, to shop, and to receive information about health care topics. These questions give a sense of why media in general is used by the participants, and also allows for analysis of which of these media the participants associate with healthcare information.

Four questions followed this asking the survey participants about how they learned to use texting-capable phones, Smartphones, computers, and social networking sites. Again, multiple answers or no answers were allowed. Possible answers included work or volunteering experience, self-taught, spouse or sibling, child or younger family member, and taught be a professional or someone who sold them the product or service. From the answers information

can be gleaned on whether or not the participants are using this technology as well as where they learned to do so.

Then five questions about responding the healthcare or medical advertisements were asked. The mediums in question were newspaper and magazine ads, television and radio commercials, e-mail (solicited or not) ads sent to them, and advertisements for these products or services seen on the Internet. Answers for each included the typical means of response (if any) to the advertisement, and included responses by phone, regular mail, e-mail, or by the visiting of an indicated website. These answers will give an indication whether or not the participants are responding to healthcare and drug advertisements, the mediums of advertising they responded to, and the method that they typically reply (if at all) to those ads.

The seven questions in the section following asked again about interest in and possible difficulties with using new technologies, with added questions about potential difficulties in accessing personal healthcare information, making healthcare appointments, and contacting health professionals. Answers were arranged on the five-point agreement Likert scale that had been used previously. The comfort with technology questions were to check for continuity with the previously asked ones, and the questions on access to medical records and personnel were to gauge the level of satisfaction (or in the interest of medical records, possible lack of interest) with their current healthcare situation insofar as the questions allowed for.

Five questions then asked about mediums in which the participant might be receiving prompts or information from physicians and other healthcare providers as well as the vendors of healthcare products. Using again the five-point Likert scale to indicate level of agreement, if any, with the questions, the participants were asked if phone calls, texts, regular mailings, e-mails, or websites were part of their experiences in communication with these entities. The

data of received by the participants could be analyzed to yield how healthcare vendors and professionals are contacting the participant directly, and the possible efficacy of these mediums.

The final survey question was about the participant's Internet healthcare searches, and what online tools, if any, they used to seek information. Answers included Google or other search engines, physicians' websites, insurers websites, AARP or other senior group websites, and a catchall "other" answer with a underlined blank space available for the participant to list other options not covered in the previous answers. Answers to this question give an indication of how the participants are using the Internet, if at all, to seek out healthcare information. Additionally, any other information provided in the "other" category might shed light onto specific websites or tools being used. See APPENDIX A for a list of survey questions.

D) Analysis

The Technology Acceptance Model, along with some variations (Bagozzi, Davis, and Warshaw, 1992) was consulted in the question design. Also, the theory of uses and gratifications directly maps onto the question of seniors adopting and using new media to expand or refine their healthcare needs and desire for information. Armed with these perspectives, the answers obtained from the survey participants were designed to answer the research questions posited in Section II.

Coding for the answers received was done on a spreadsheet, with numerical values assigned based on the answer spacing order of appearance under the particular question. The questions in the survey were delineated in the columns, and each row was the given answers of one participant. Tabulations were conducted to come up with demographic totals as well as

numerical total values for each answer given. These totals were used to find the mode for each question and build a composite participant based on those values.

Once demographic information was coded, the remaining survey questions were numerically coded. A small amount of data interpolation was needed when unanswered (blank) opinion or frequency question was found; in these instances the answer was coded as "No Opinion/Not Applicable". Once any data discrepancies were accounted for. many comparisons were then made among the data. With regards to technology in general, frequencies of use for particular technological artifacts, acceptance levels of new technology, and interest in learning new technologies were assessed. Difficulties in both using technology and in obtaining medical information and healthcare provider contact were codified.

Healthcare media were studied in the form of advertisements and in the participant's ability to seek out information for themselves. In reference to health advertising, questions such as the preferred response mechanism when a healthcare solicitation occurs in a particular medium were reviewed. For example, when an e-mail solicitation is received, what is the preferred response method? In the retrieval of healthcare information, both the mechanism and the level of difficult were studied.

Comparison of younger seniors versus older seniors media usage were seen to have many differing characteristics. When this was suggested by the data, they were studied separately and contrasted with one another. When differences between younger and older groups were small, they were treated as a single entity.

V) FINDINGS

A) Participant Demographics

Our participants consisted of 41 individuals who returned completed survey instruments via regular mail. 29 of the respondents, or roughly 71 percent, were female. 11 male respondents yielded 27 percent of the population (see figure 1 below). One of the surveys was completed without a gender being indicated, meaning the 2 percent of the sample was omitted for any analysis or determinations based on gender.

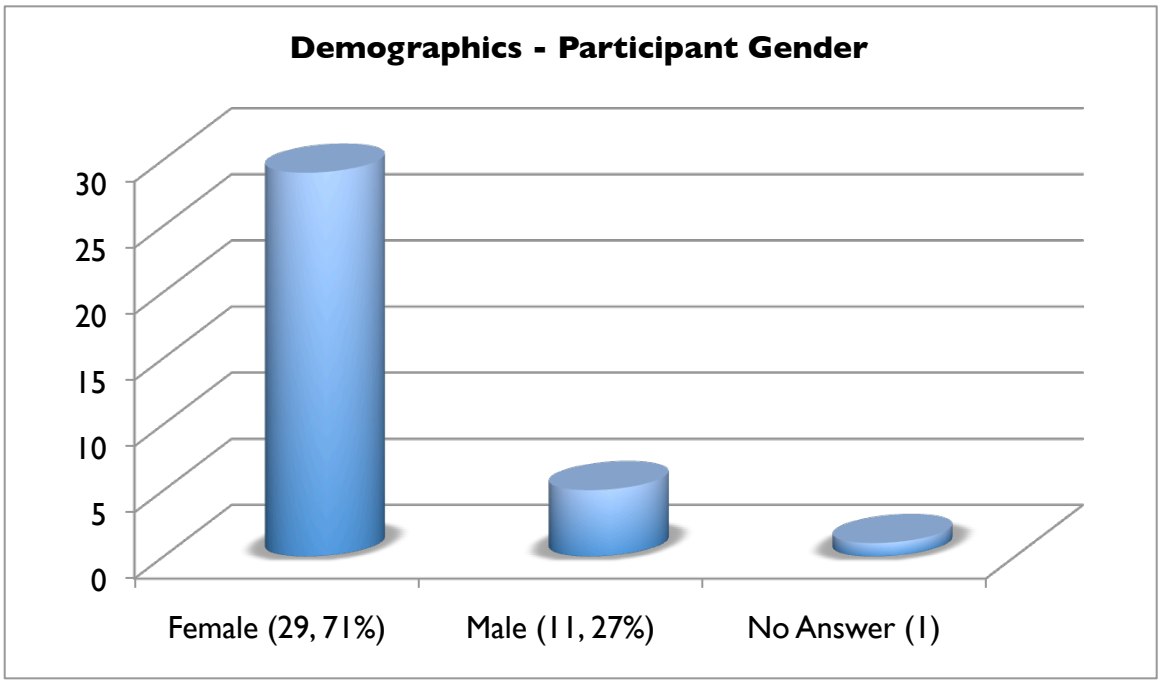

Figure 1) Demographics - Participant Gender
For interpretation of the references to color in this and all other figures, the reader is referred to the electronic version of this thesis.

There was an assumption on the possible minimum ages of the participants based on the requirements of living in the community in which the entire population dwelt; see Section IV, Part A for more on this. There were ten age ranges able to be selected on the survey, ranging

from 61 years or younger to 86 years or older in three-year increments. Again, one returned survey omitted this information and was accounted for in any subsequent age-related calculations. The largest segments selected by the participants were the age ranges of 80 to 82 years and 86 years and older with 17 percent of the total population indicating that their ages fell within these ranges. The next most common age ranges were from 68 to 70 and from 77 to 70, with roughly 15 percent of the population falling into those ranges. No other age range accounted for more than approximately 12 percent of the population (see Figure 2 below).

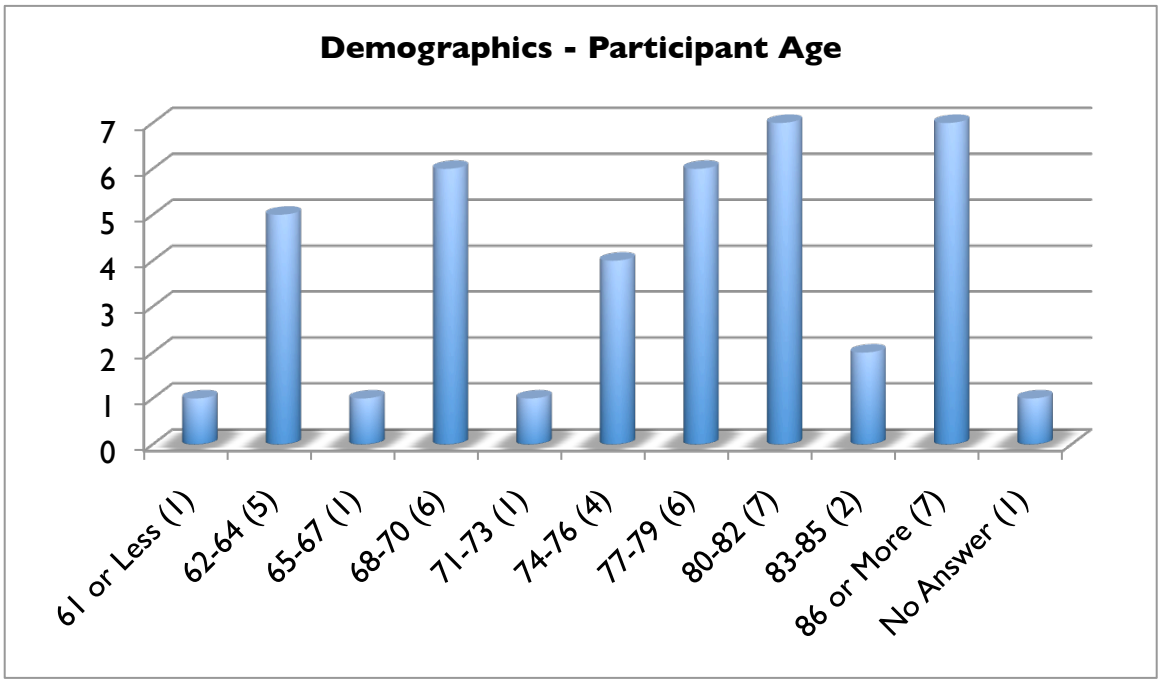

Figure 2) Demographics - Participant Age

All of the respondents identified themselves as non-Hispanic Whites; almost 88 percent of them identified themselves as retired from work. 22 percent of the population identified as being single, never married. 27 percent were married, 20 percent were divorced, and roughly 31 percent had been widowed. The largest single educational segment possessed a high school education or its equivalent; 44 percent of the indicated that their highest educational attainment was a high school diploma or GED (see Figure 3 on the following page).

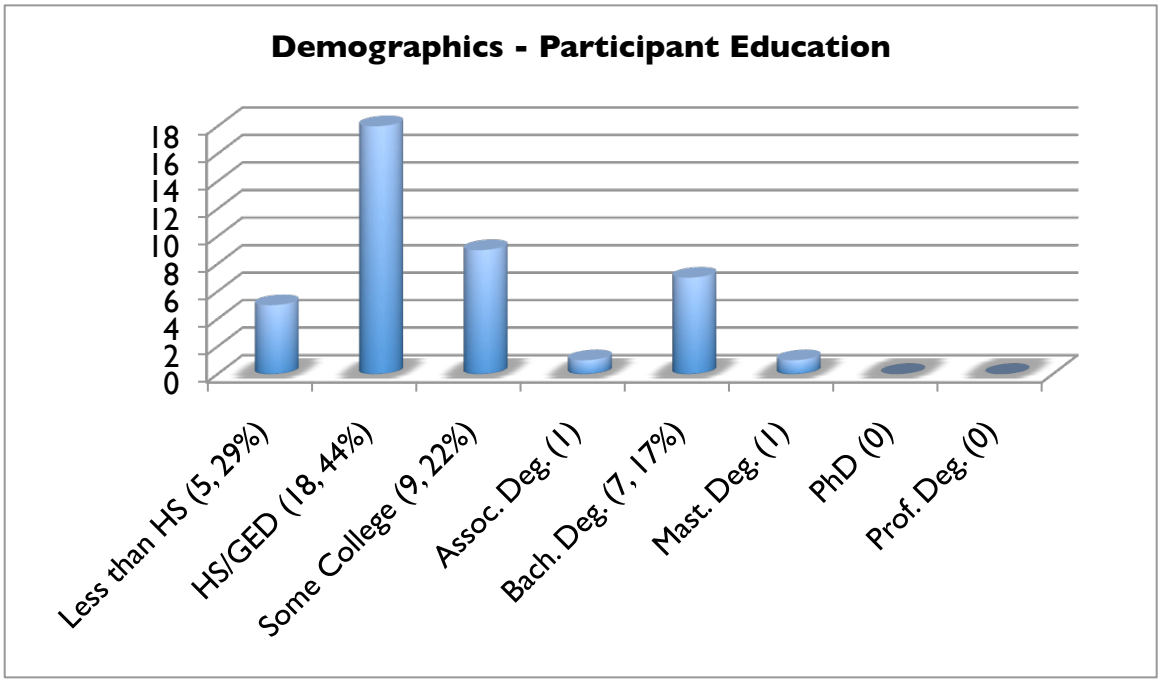

Figure 3) Demographics - Participant Education

B) The "Typical" Respondent

Analyzing the survey participants from a modal standpoint gives us a sense of the "typical" respondent, who is female in her early or late 80s. She is a Caucasian high school graduate who is both widowed and retired. She is a frequent reader of newspapers, magazines, and is an avid TV watcher. Somewhat less frequently she listens to the radio. She is slightly more likely to use a cell phone than not, and not at all likely to have or use a Smartphone, nor does she text. She might have the time to learn new technologies, but not necessarily the inclination to. She is intimidated by new technology, but would be more likely than not to attend classes in new technology if she felt these classes were local and available.

She knows how to use a computer, and was more likely to have learned these skills from a prior employment situation than from one of her children or a younger family member.

If she uses online social networks, she was four times as likely to be self-taught in their usage or to have learned about them from a younger family member than from a previous work environment or family member in her age group. Primarily, her phone and e-mail communications are to keep in touch with her family and friends. Her general Internet use, sans e-mail or social networking, is likely to be related to seeking information on healthcare.

Regarding healthcare, she regularly visits her doctor and has little difficulty arranging for healthcare appointments or contacting healthcare professionals. She is either not interested in directly accessing her medical records or seems to have no problems with that access.

She is most likely to respond to healthcare advertising from newspapers or magazines by mail. Healthcare advertising on television is most likely to be responded to, if at all, by visiting websites. E-mail solicitations and information on healthcare are also more likely to get her to go a suggested website than to prompt a response via e-mail. Her primary online search tool is Google. Radio healthcare advertising, however, is predominantly responded to by telephone.

C) Research Questions Answered

RQ1) What forms of media (new and traditional) are older Americans using to address their healthcare concerns and needs?

Five mediums were studied that deliver health advertisements encountered by the population; solicitations by newspapers and magazines, television commercials, radio spots, e-mail received, and ads placed throughout the Internet on various websites. The highest overall

response rates by the survey respondents were to advertisements placed in newspapers and magazines. 37 percent of the study participants had responded to a print ad. The primary mechanism for that response was regular mail at 36 percent, followed by phone response at 32 percent, website visitation at 27 percent, and e-mailing the healthcare vendor or service provider at 5 percent.

Television commercials and e-mail solicitations were equally likely to have been responded to by the study participants. 32 percent of them had responded to a television or an e-mail ad, but the mechanism of response differed between them. Responses to television commercials about healthcare were primarily addressed by going online; 39 percent of responders visited a website or conducted an online search after prompting by a TV ad. Phone and regular mail were tied for the second most utilized response mechanism at 28 percent each. Lastly, participants who responded to a television advertisement by a healthcare vendor did so by e-mail 5 percent of the time. When e-mail solicitations by healthcare providers and vendors (tied with TV at 32 percent of participants having responded to at least one) were responded to, that response was typically in the form of visiting of a website. 38 percent of respondents did so. This was followed by reply e-mails at 25 percent and reply by phone or regular mail were tied for the last preferred mechanism of response at 19 percent each.

Radio commercials for healthcare had been responded to at least once by 29 percent of the population. The primary tool used for responses to radio ads was the phone at 44 percent, with visiting a website at 31 percent, regular mail responses at 19 percent, and e-mail responses at 6 percent, respectively.

Health advertising on the Internet, placed on websites and search engines, had the lowest response rates at 22 percent. The mechanisms of response and relative rates of that

mechanism's use were to go to websites 40 percent of the time, send regular mail 30 percent of the time, place a phone call 20 percent of the time, and send an e-mail to the vendor or service provider 10 percent of the time. See APPENDIX B for pie chart figures representing these different media and types of response.

RQ2) At what rates are older Americans adopting/using new media in relation to their healthcare concerns and needs?

In addition to the communication with the healthcare industry in response to advertisements through the various means reviewed in RQ 1, the population of this study used various forms of media to both research healthcare topics and communicate with vendors and service providers irrespective of advertising. 34 percent of the total population consulted the Internet for information about healthcare. 20 percent had used e-mail to this end. 12 percent had indicated that they had made phone calls for the express purpose of seeking out healthcare information. None of the seniors in this survey, however, indicated that they had made use on social networking websites or online social media of any nature to search out health information (see Figure 4 on the following page).

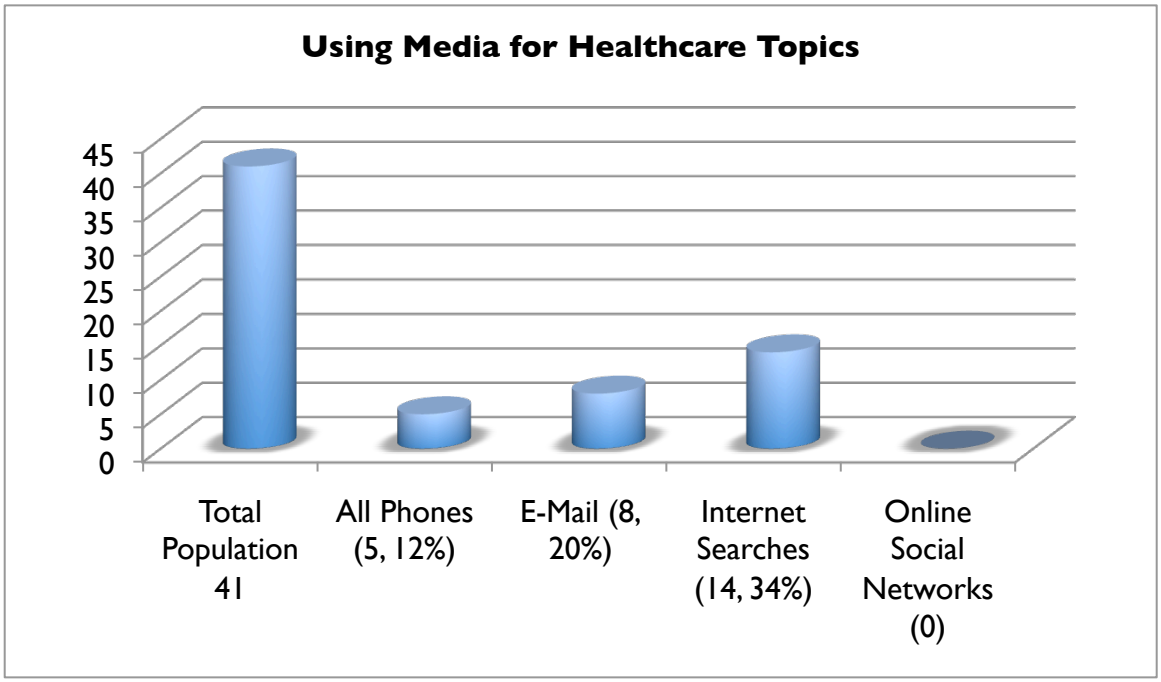

Figure 4) Using Media for Healthcare Topics

RQ3) What are some general barriers to older Americans in the adoption of new technology?

The survey instrument asked several questions about common barriers seniors might face in the adoption of new technologies. There was a general feeling among the population of intimidation with new technologies; overall, 66 percent of the respondents indicated some level of intimidation in adoption new technology, with nearly 30 percent of that number expressing strong feelings of intimidation.

General difficulty in the use of new technology was also expressed within the population. Though less pervasive than feelings of intimidation, 59 percent of the participants experienced some degree of difficulty in the use of new technology, with 21 percent of those experiencing great difficulty in its use (see Figure 5 on the following page). This sentiment is reflected in the infrequent use of texting and Smartphone Internet capabilities. Frequent text-

senders and those using a mobile device for e-mail accounted for only 5 percent of the sample, with overall frequent Smartphone and phone Internet use at 2 percent.

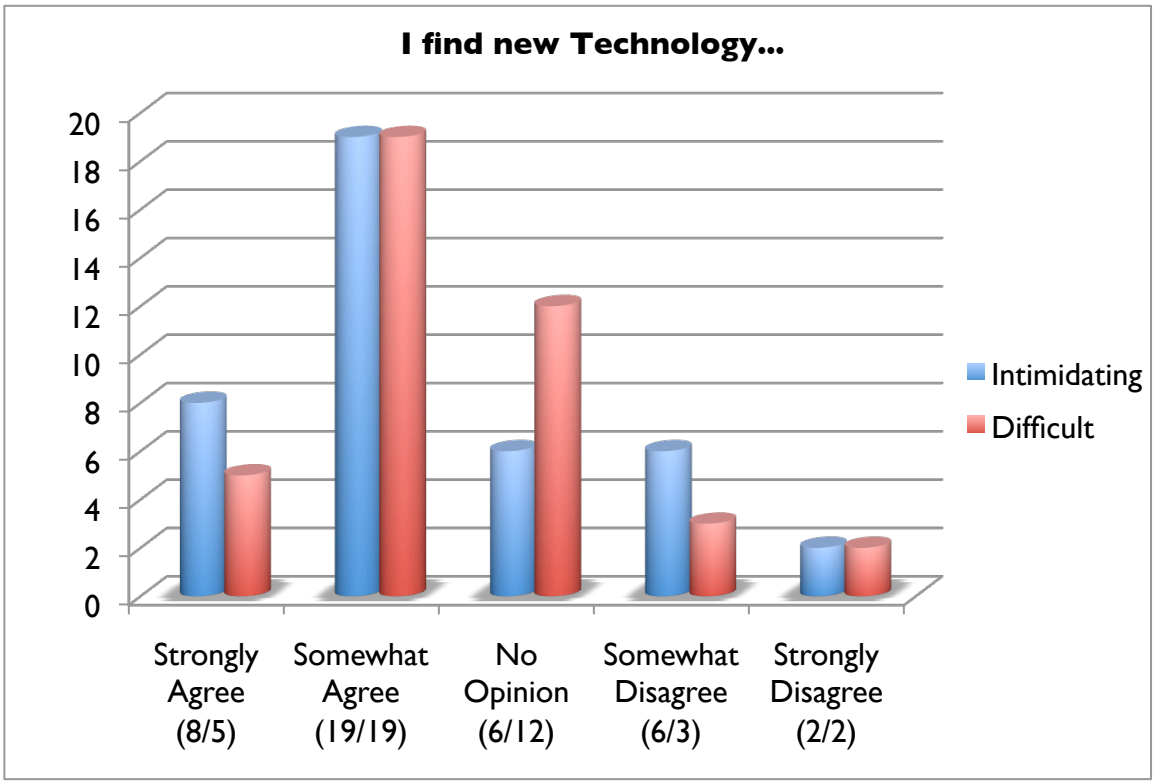

Figure 5) Technology Intimidation and Difficulty

The population indicated a high level of satisfaction in both contacting and successfully making appointments with healthcare professionals. Their general level of satisfaction with accessing their medical records seems much lower, but their level of disinterest in obtaining these records suggests that this is not of great importance to them. This lack of importance can be a barrier, in that with no perceived benefit in the incorporation of new technologies to aid in their healthcare communications, there will be no pressing desire to do so.

Lack of interest can also be a barrier in adoption new technologies. The data received indicated discrepancies depending or whether the question was phrased to suggest that the participant did not have an interest in technology versus phrasing suggesting that they did. When asked if they agreed with the statement that they did not have an interest in learning

new technologies, 46 percent or the overall population either somewhat or strongly agreed. However, when asked if they agreed with the statement that they did have an interest in learning new technologies, only 12 percent of the total population registered either partial or strong disagreement (see Figure 6 below).

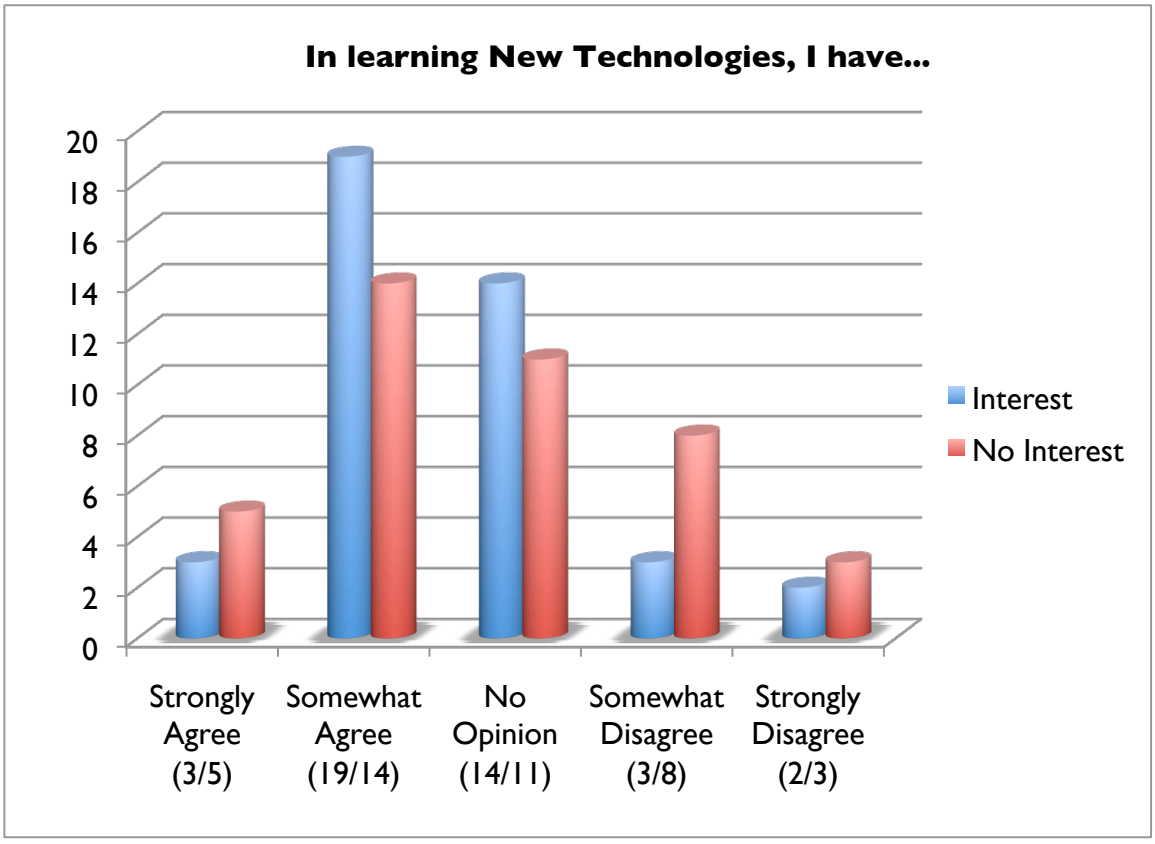

Figure 6) Technology Interest or Disinterest

RQ4) How are older Americans learning to use new media and technologies?

Study participants were asked by what means they learned to use various media. The survey selections were learning to use a computer through work or volunteer experience, self-taught, learning from a spouse or sibling, from a child or younger family member, and finally by a

professional instructor or salesperson of the device in question. A single individual can learn from multiple venues, and some of the responses indicated this with multiple selections made.

61 percent of the total population indicated that they had received at least some training in the use of computers. Of these computer literate individuals, the largest segment indicated that they had at least in part learned to use computers in a work or volunteer environment at 52 percent. Those that had at least in part self-taught themselves followed at 44 percent. 28 percent of the computer users indicated that they had in part some learning experiences from children or younger family members, and 12 percent had some training from a spouse or sibling. Only 8 percent of those versed in the use of computers indicated that they had received any training from the computer vendor.

The experience of learning to use phone texting was also questioned. Roughly 20 percent of the population indicated that they had some level of experience in learning texting technology. Unlike their experiences with computer, the participants who had some training in texting received that instruction from a single source. Of these, 50 percent of them had been self-taught in their function, and 37 percent had received some training from a child or younger family member. The remaining 13 percent had been trained in the use of texting by a spouse of sibling.

Smartphone instruction followed the pattern of texting in that any instruction received in their use was obtained from a single source. 12 percent of the total population indicated that they had received instruction in Smartphone use. 60 percent of them identified as being self-taught, while a child or younger family member had instructed 40 percent of the Smartphone using population.

Social networking sites and status updating services, such as Facebook or Twitter, followed the same patterns of potential multiple-source learning by a single individual that was seen in the learning of computer technology. 22 percent of the total population had some learning experiences with online social networking. Among them, self-taught experiences and learning from a child or younger family member tied for the largest share of instruction experiences; 44 percent of social network website users indicated some part of their learning experience came from one of these two sources. Learning to use online social networks in part from work or volunteer experiences, from a spouse or sibling, or from a vendor who supplied them with the computing device tied for least likely source of instruction at roughly 11 percent each. Refer to APPENDIX C for figures on ways the participants learned various media.

RQ 5) Are particular age ranges of older persons more or less likely to adopt, reject, or utilize any particular form of media in their healthcare communications?

Many discrepancies were seen between "younger" (those below of age of 65) and "older" (those 65 and older) seniors in the data received. Most striking of these was in newspaper and magazine consumption. 91 percent of older seniors indicated that they read print media with some frequency, while only 33 percent of younger seniors did so. This suggests that healthcare communications targeted toward the concerns of the older seniors, such as chronic conditions, would be particularly effective in reaching the older seniors in the population.

Increased Internet use, as well as the use of Social Networking Sites (SNSs), showed a correlation to being in the younger age demographic among our participants. Table 1 below shows that younger seniors were almost twice as likely to have used the Internet and almost four times as likely to have used a SNS than their older counterparts.

Age Grouping	Have Used the Internet	Have Used SNSs
Younger Seniors (up to 64 Years of Age)	100%	66%
Older Seniors (65 Years of Age or Older)	56%	18%

Table 1) Internet/SNS Use by Age Group

Cell phone usage among younger seniors is far more prevalent than among their older peers. 50 percent of the younger cohort used their cellular phones with a higher degree of frequency than the baseline, while only 18 percent of older adults indicated so. While the level of frequent or somewhat frequent use of texting among younger seniors was only at 17 percent, their overall familiarity with the technology suggests that it would be a better venue for communications between them and healthcare professionals than among the older senior cohort, whose frequent or somewhat frequent use of texting was at 0 percent. Table 2 on the following page shows the correlation between age grouping and mobile device use.

Age Grouping	Mobile Users (Texting, E-Mail, or Internet from a Phone)	Do Not Use Mobile (Texting, E-Mail, or Internet from a Phone)
Younger Seniors (up to 64 Years of Age)	71%	29%
Older Seniors (65 Years of Age or Older)	12%	88%

Table 2) Mobile Use by Age Group

This trend of usage was also found for Smartphones whether used for e-mailing or Internet consultation, with the maximum of frequent or somewhat frequent use among the younger senior population at roughly 17 percent, while older seniors did so at or near 0 percent (see Figure 7 on the following page).

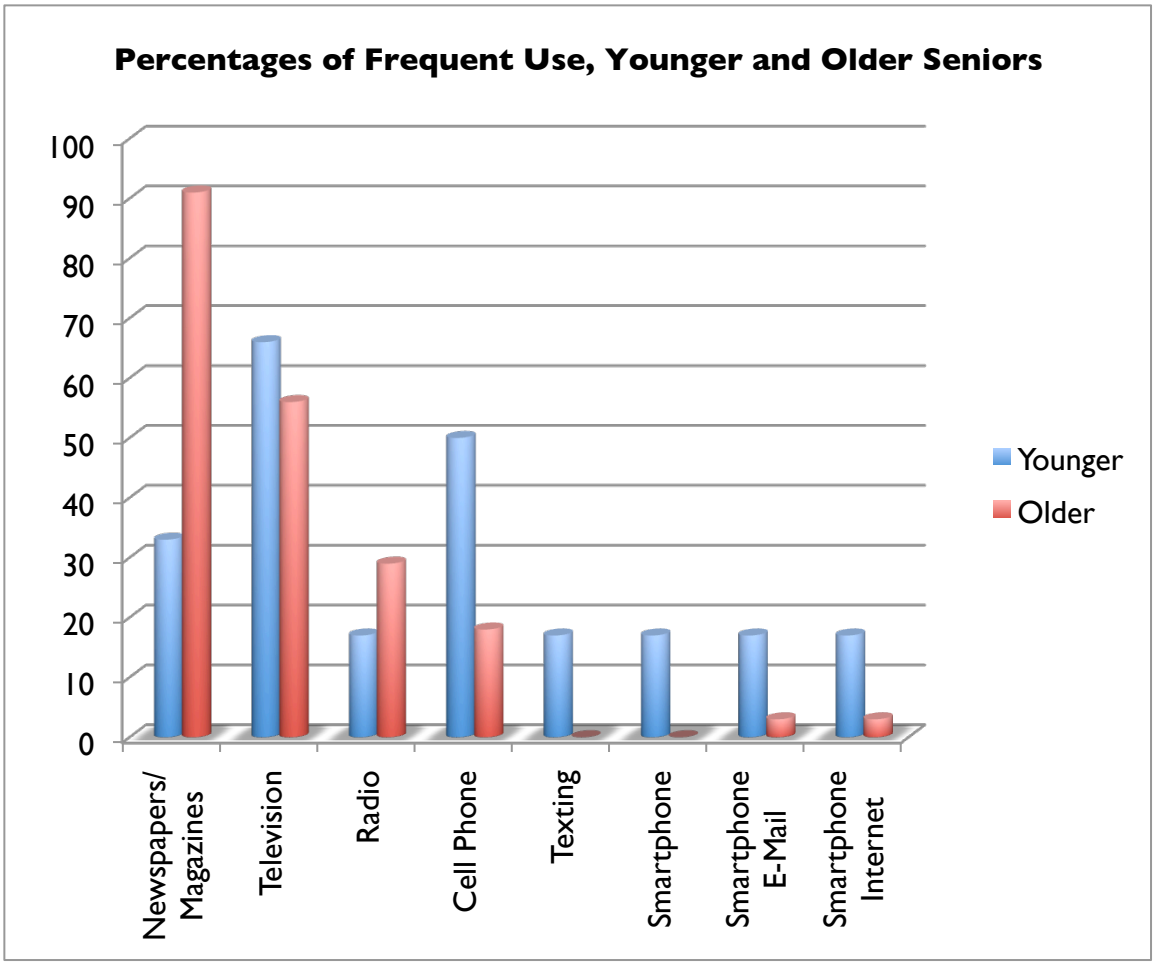

Figure 7) Media Frequencies Younger and Older

In general, younger seniors were more likely to have an interest in learning new technologies. 33 percent of them agreed that they had little interest in learning new technologies, compared to 47 percent of older seniors. When the question was stated in the positive, such that their level of agreement with the statement "I have interest in learning new technology" was asked, 83 percent of younger seniors expressed some level of agreement. Only 50 percent of older seniors had some level of agreement with the statement.

Younger seniors also exhibited far less difficulty in obtaining general healthcare information. 83 percent of them registered some level of disagreement with the statement "I have difficulty with accessing healthcare information", where as only 38 % of older seniors had

some level of disagreement with this statement. In making healthcare appointments with providers, contacting healthcare professionals, and in obtaining copies of their medical records, younger seniors also expressed a slightly lower level of difficulty than did older seniors. Correlations between age category and levels of intimidation or disinterest can be found on Table 3 below.

Age Grouping	Find New Technology Intimidating	Disinterested in Learning New Technology
Younger Seniors (up to 64 Years of Age)	33%	33%
Older Seniors (65 Years of Age or Older)	71%	47%

Table 3) Technology Intimidation and Disinterest by Age Group

Age also appears to play a role in how various technologies were learned. All of the participants, regardless of age, indicated that if they knew how to text, they had learned that ability from a single source. 50 percent of the younger group of seniors taught themselves how to text on their mobile phones, while only 3 percent of older seniors indicated they had taught themselves how to text. Older seniors were twice as likely to have learned how to text from a child or younger family member then have been self-taught. Computer use faired similarly, although both age categories indicated some instances of having leaned to use computers from multiple sources. 66 percent of the younger senior population had in some part taught themselves how to use a computer, while on 21 percent of older seniors reported this.

Social Networking Sites, like computers in general, had the potential of having been learned from more than one source. In following with the texting and computer examples above, the cohort of younger seniors were far more likely to have educated themselves in the uses of SNSs than the older senior grouping. 50 percent of younger seniors indicated some degree of self-teaching in SNSs, while only 3 percent of older seniors had done so. Table 4 below shows the correlations between age category and likelihood of self-teaching new technologies (computers, SNSs, and texting) versus learning from a family member.

Age Grouping	Learned Technology (Computers, SNSs, Texting) From Family (Spouses, Siblings, Younger Family Members)	Learned Technology (Computers, SNSs, Texting) From Self-Teaching
Younger Seniors (up to 64 Years of Age)	3%	56%
Older Seniors (65 Years of Age or Older)	14%	9%

Table 4) Learning Technology by Age Group: Family vs. Self-Taught

RQ 6) Are healthcare providers and vendors addressing both the needs and the interests of the retirement-age community?

Although, as shown previously, the learning curve for new technologies appears to be steep among many of the study participants, the data received suggests that their existing communication networks are meeting the needs and interests of the survey population. Among

the total population, over 90 percent indicated that they have access to regular visits with their physician. Of older seniors among the participants, who are more statistically prone to suffering from multiple chronic illnesses, 94 percent had some measure of agreement with the statement "I regularly visit my doctor/health care provider". 66 percent of younger seniors, who typically have fewer chronic conditions, expressed some level of agreement with the statement (see figure 8 below).

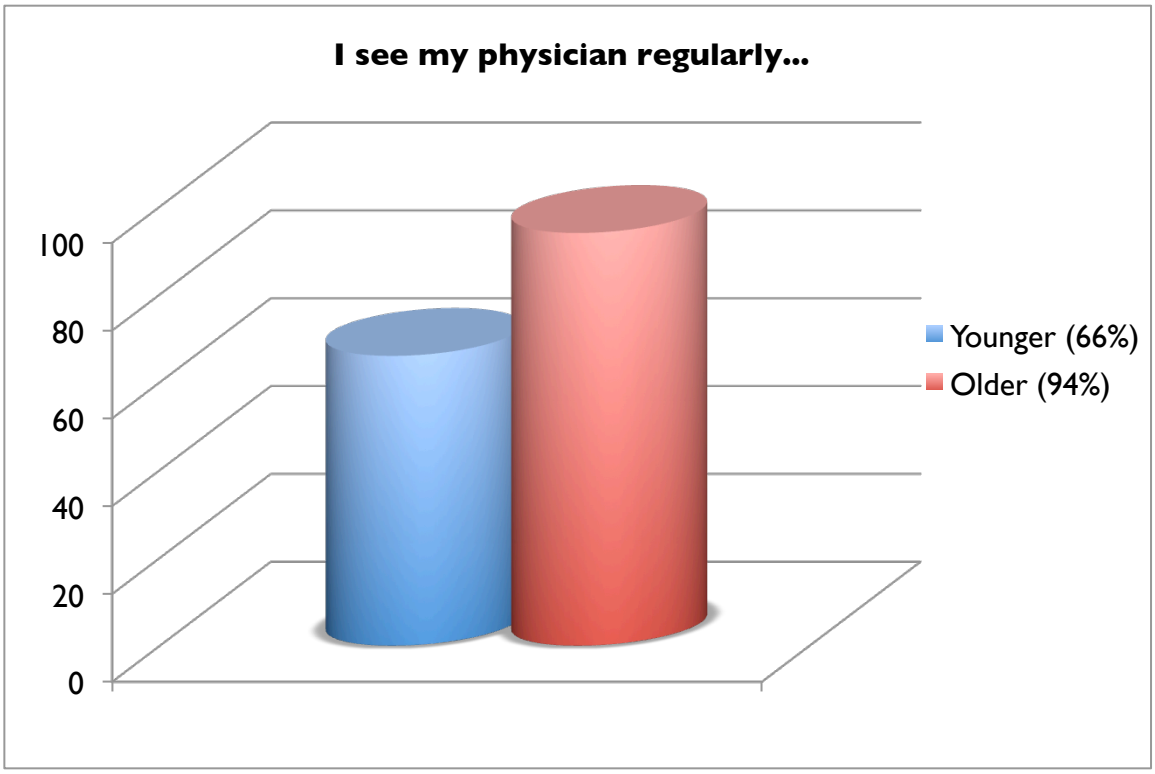

Figure 8) Physician Visitation Frequency

While older seniors had a noticeable tendency to have greater difficulties in seeking out general healthcare information, 37 percent of the total population surveyed had no opinion on these difficulties whatsoever. Roughly 43 percent of the total population disagreed with the statement "I have difficulty with accessing healthcare information", and only 20 percent of them agreed either strongly or somewhat with the statement.

As has been shown, there is a marginal but positive level of interest in new technologies. The two measurements of access to health professionals and access to healthcare information, when coupled with the previously shown general reluctance to adopt new technologies, suggests that the application of these technologies to the healthcare of the population is an activity they put little overall value into.

VI) DISCUSSION

Healthcare IT is a burgeoning business; $40 billion dollars is expected to be spent by the end of 2011 in the field, rising over 20 percent from the previous year with a projected growth rate of between 22 and 24 percent over the next few years ("Market Research," 2011; "Healthcare IT Spending," 2011). Most of that capital is being spent on the modernization of medical records and the new hardware and software to make these changes. This medical IT infrastructure spending is "backend"; it is to allow healthcare professionals greater access to a patient's EMRs and to allow for flexibility for patient's on the go or seeing multiple healthcare professionals at once. Additionally, healthcare providers are looking to reduce medical billing costs by streamlining insurance coding schemes.

But some of this surge in spending is for mobile health technology, which due to the increased use of Smartphones, has seen a 17 percent growth rate over the few proceeding years and is estimated to reach over $2 billion by the end of 2011. By 2012, it is estimated that half of the cellular phone market in the U.S. will be a Smartphone market. Health-related "apps" for these devices are projected to be used by nearly 500 million people worldwide by 2015, and wireless industry surveys have shown a nearly 80 percent rate of interest in the applications ("Healthcare IT Spending," 2011).

National surveys mirror this local survey in the sense that our aging fellow citizens are typically not Smartphone users, nor do they text. The explosion of communication in these mediums has not stopped at the threshold of medical services as indicated previously. In fact, medical product and service providers have embraced these technologies for the same reasons that business sectors have; increased marketing presence, streamlining service delivery and

information gathering, reducing personnel costs, etc. Is the largest growing consumer segment of the healthcare industry actually using or benefitting from this? Fox (2011), in review of Pew Internet survey data found that mobile health care "apps" were only used by 6 percent of those aged 50-64 and 5 percent of those aged 65 or older.

Additionally, this localized survey also suggests that while seniors may use the Internet to search for healthcare information, they are more likely to respond to more traditional forms of advertising (print ads and television) and communicate with product and service provides by traditional means (regular mail, telephone). The frequency of newspaper and magazine readership found within the sample surpassed the observations Dahmen and Cozma (2009) made of older Americans being loyal readers. Within the population of this study there is a general sentiment that classes in these newer forms of communication would be attended if the study participants felt they were easily accessible and locally available. Anecdotally, it would seem that they are available; local fliers and television commercials suggest that there are a myriad of low-cost or free learning options addressing these technologies.

Is there some gap between the advertising of these learning activities and the senior audience? Are these learning activities not addressing the particular needs of the retirement age population? Assisted care facilities and senior recreation centers host many such seminars, often by local medical conglomerates, insurance companies, or the service/device vendors themselves. For the American senior citizens among our population sample, however, who are living in their own homes, exposure to opportunities for the educational activities will typically only be gleaned from the spread of media that they already consume.

Another point of note from this survey is the marginal difficulty or disinterest by the participants in obtaining their medical records, EMR or otherwise (see Figure 9 below). One could logically assume that if complete medical records were easily obtainable by patients, then moving between healthcare product and service providers would be much easier. But if one is currently happy with their health service, is there an incentive from the perspective of the patient to move to EMR? Poon et al. (2006) also found limited interest in EMR and new methods of doctor-patient communications that bore out in the data received from the research done in this study.

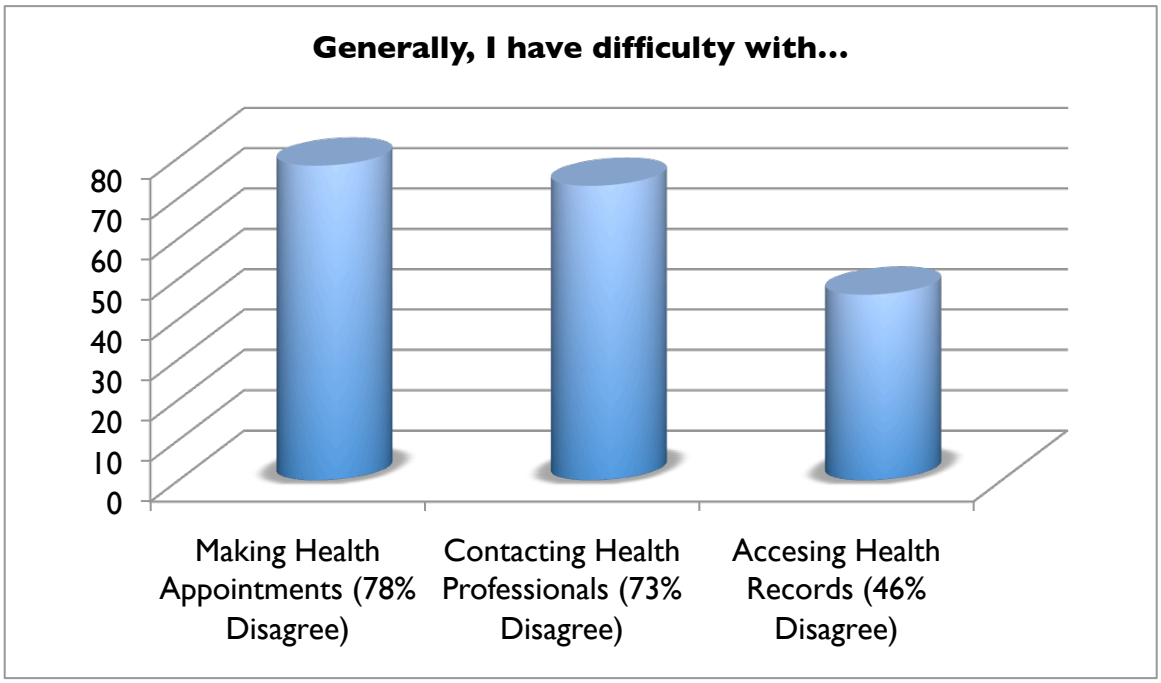

Figure 9) Healthcare Difficulties

The U.S. Department of Health and Human Services Agency for Healthcare Research and Quality identified usability and unreliability issues as well as deficits in the perception of benefits and inconvenience as major factors in the lack of adoption of healthcare ICT in the elderly, chronically ill, and underserved populations ("National Health Expenditures," 2010).

Resistance to the adoption of healthcare ICT by the elderly is not a one-way street; there is evidence that healthcare providers also have exhibited resistance to utilizing ICT in patient care. Schaper and Pervan (2004) note that acceptance of new media in the field of occupational therapy is not only dependent upon the new media acceptance of the individual patient or therapist, but of the entire allied healthcare unit which the therapist represents.

Much of the disinterest among elderly patient lies in the world of texting, Smartphones, and their myriad of downloadable applications, such as HealthInsight of Utah who are developing SMS-based educational diabetes tools, and the Front Porch Center for Technology Innovation and Wellbeing of Los Angeles who are developing a phone app for reminding seniors to take their medicines at the appropriate times (Pulley, 2011). However, other healthcare initiatives such as the web browser based Independa (http://www.independa.com), build HIT functionality into any existing web browsing tool. For the survey population in this study, 61 percent of whom expressed some level of familiarity with personal computing, these browser tools would face far easier acceptance and higher adoption rate than to add new technology to their lives.

Were HIT to be designed for this population and ones like it, mobile app developers would do well to base their functionality off of "mobile friendly" or mobile-enabled standard websites. Most large commercial vendors already utilize this technology, and with the release of HTML5, the potential for website-to-mobile integration will only grow. As was indicated in the survey results of this study, cell phone penetration rates among our population are high; technology that incorporates non-text, non-web automated or timed calling might also prove cost effective when the alternative might be an in-person, time-consuming, and costly visit from a healthcare worker.

But the elderly cannot be merely seen as a large consumer group. A large number of seniors, whether living in assisted care, nursing homes, or in their own residence are doing so on a fixed retirement income that does not afford them many new technological baubles and conveniences. Costs for medical services typically travel through some mechanism of insurance coverage, whether that is Medicare, Medicaid, or a private or supplemental policy. Many of these policies are "no frills" and have yet to make allowances for emerging HITs. Therefore even more so than with many healthcare-consuming demographics, price is often a priority when healthcare options are considered.

Analysis of the survey data also yielded some surprising results. Dahmen and Cozma's study (2009) which included newspaper and magazine readership was touched upon earlier in this section, but the specifics were striking; they found the most loyal reader to be in the generations ranging from the late "Baby Boomers" of 50 years of age to the "Silent Generation" age of 74. The population of this survey proved more nuanced, however. 91 percent of older seniors, presented by this study as the earliest of the "Boomer" generation (aged 65 as of 2011) either frequently or somewhat frequently read print media, but only 33% of the late "Boomers" (aged 64 and lower) were frequent or somewhat frequent print consumers.

Another surprise was in the difference in frequency between cell phone usages between younger and older seniors. Cell phone technology is often considered a ubiquitous part of everyday life, and 50 percent of the younger senior population indicated that they used their cell phones frequently, and 100 percent of this group indicated some cell phone use. Among the older seniors surveyed, however, of the 94 percent that indicated some level of cell phone use, only 18 percent noted frequent use of them.

Among the 61 percent of the total population sample that had some experience with computers, the younger cohort indicated some that 66 percent of them were to some extent self-taught in their use. For the older cohort, only 21 percent were in part self-taught in computing technologies. This may account in some part for the increased willingness of the younger seniors to respond to media healthcare advertisements by visiting websites over their older peers; they were over five times more likely to respond to a print ad by going online, and over three times more likely to respond to a television or radio advertisement by going to a website. Also of note, none of the participants, regardless of age, indicated that they had visited or used a social networking site or service for seeking healthcare information.

Finally, in analysis of the data along age strata, there existed a measure of statistical ambiguity among the "young seniors" in the survey, as this segment of the population was quite small, with 6 members, or roughly 15 percent of the total population size.

VII) CONCLUSION and FUTURE WORK

This study used a survey instrument, data on healthcare ICT trends, national health and statistical information, and business informatics and forecasts to create a portrait of the media use of population with particular emphasis on healthcare. Through modal analysis, a profile was created of the "typical" survey participant and assessments of their media use and healthcare needs, and whether or not current advances in healthcare communications are addressing them. In comparing the means by which the study participants originally obtained their health information to the means they use to communicate back with healthcare product and service providers, a media efficiency overview was produced with an eye towards new media use. Inductive reasoning suggests that a much higher frequency of regular physician visits, when coupled with increased difficulties and decreasing interest in accessing healthcare information has led older seniors to rely primarily on their physicians and health care providers to inform their healthcare decisions, as opposed to seeking out more information for themselves.

Opportunities for future research include predictive analytics studies; these could actually aid in assessment of future behaviors in a population where the adoption of a new telecommunication technology is desired, as opposed to merely observing current activities. Additionally, focus groups including seniors might yield new areas to observe and add qualitative insight into future survey designs. Having the ability to survey or interview a population's healthcare providers could prove insightful as to where senior populations are being directed for healthcare information as well as in assessing the provider's opinions on the usability or successes in employing new and traditional media in the care of their patients. Lastly, including in a survey of learning about various technologies from non-related peers and classical modes of

instruction, such as colleges or vocational training, would add another dimension to the knowledge of how retirement-aged Americans are using media to communicate with healthcare product and service providers.

APPENDICIES

APPENDIX A) Survey Questions

This survey was designed to gauge acceptance and use of various types of media, and in particular the relation of media use and healthcare. This first page asks some general questions about you. **Please remember that the answers you provide will remain anonymous and will not be linked to you personally in any way**.

1) I am a:
_____Female
_____Male

2) Aged:
_____61 or younger
_____62-64
_____65-67
_____68-70
_____71-73
_____74-76
_____77-79
_____80-82
_____83-85
_____86 or older

3) Racially, I am:
_____White (non-Hispanic)
_____African-American
_____Hispanic
_____Asian-Pacific Islander
_____Native American
Other: _____

4) My level of education is:
_____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 (MD, JD)

5) My relationship status is:
_____Single, Never Married
_____Married
_____Separated
_____Divorced
_____Widowed

6) My employment status is:
_____Retired
_____Unable to work
_____Employed for wages
_____Self-employed
_____Unemployed; looking for work
_____Unemployed; not looking for work
_____A student (including Continuing-Lifelong Education)
Other: _____

The next series of questions asks about your general use of various forms of media and opinions about technology. **If you do not use the form of media asked about** (newspapers/magazines, TV, radio, texting, Smartphones, E-mail, Internet, and social media websites) **you can indicate that by selecting the "No Opinion/Not Applicable" option**.

7) I receive/read newspapers or magazines:
_____Frequently
_____Somewhat Frequently
_____No Opinion/Not Applicable
_____Somewhat Infrequently
_____Infrequently

8) I watch television:
_____Frequently
_____Somewhat Frequently
_____No Opinion/Not Applicable
_____Somewhat Infrequently
_____Infrequently

9) I listen to the radio:
_____Frequently
_____Somewhat Frequently
_____No Opinion/Not Applicable
_____Somewhat Infrequently
_____Infrequently

10) I have/use a cell phone:
_____Frequently
_____Somewhat Frequently
_____No Opinion/Not Applicable
_____Somewhat Infrequently
_____Infrequently

11) I send/receive text messages on my phone:
_____Frequently
_____Somewhat Frequently
_____No Opinion/Not Applicable
_____Somewhat Infrequently
_____Infrequently

12) I have/use a Smartphone (Internet-capable phone):
_____Frequently
_____Somewhat Frequently
_____No Opinion/Not Applicable
_____Somewhat Infrequently
_____Infrequently

13) I access my E-mail on my Smartphone:
_____Frequently
_____Somewhat Frequently
_____No Opinion/Not Applicable
_____Somewhat Infrequently
_____Infrequently

14) I access the Internet on my Smartphone:
_____Frequently
_____Somewhat Frequently
_____No Opinion/Not Applicable
_____Somewhat Infrequently
_____Infrequently

15) Generally, I do not have the time to learn about new technology.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

16) Generally, I do not have the interest or inclination to learn about new technology.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

17) I find new technology intimidating.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

18) If local and available, I would attend classes to learn new technology.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

The following questions ask about what you might use various forms of media for, and where you first learned to use them. You may select all that apply on any question; **if the question does not apply, simply leave the answers blank**.

19) I use my telephone, cell phone, or Smartphone to:
_____Keep in touch with family/friends
_____Get local and national news
_____Conduct business
_____Shop
_____Receive information on health topics

20) I use E-mail to:
_____Keep in touch with family/friends
_____Get local and national news
_____Conduct business
_____Shop
_____Receive information on health topics

21) I use the Internet (World Wide Web) to:
_____Keep in touch with family/friends
_____Get local and national news
_____Conduct business
_____Shop
_____Receive information on health topics

22) I use social network websites (Facebook, MySpace, LinkedIn, Twitter, etc.) to:
_____Keep in touch with family/friends
_____Get local and national news
_____Conduct business
_____Shop
_____Receive information on health topics

23) How did you learn to use a texting phone?
_____Work/Volunteer Experience
_____Self-taught
_____Spouse/sibling
_____Child/younger family member
_____Taught by a professional who sold me the phone/computer/service

24) How did you learn to use a Smartphone?
_____Work/Volunteer Experience
_____Self-taught
_____Spouse/sibling
_____Child/younger family member
_____Taught by a professional who sold me the phone/computer/service

25) How did you learn to use a computer?
_____Work/Volunteer Experience
_____Self-taught
_____Spouse/sibling
_____Child/younger family member
_____Taught by a professional who sold me the phone/computer/service

26) How did you learn to use social network websites (Facebook, MySpace, LinkedIn, etc.)?
_____Work/Volunteer Experience
_____Self-taught
_____Spouse/sibling
_____Child/younger family member
_____Taught by a professional who sold me the phone/computer/service

This final set of questions relates to healthcare and using various forms of media to learn about healthcare topics, services, and communicating with healthcare providers. **If the question does not apply, simply leave the answers blank**.

27) I respond to health care/drug ads I see in newspapers/magazines by:
_____Phone
_____Mail
_____E-mail
_____Visit websites

28) I respond to health care/drug ads I see on TV by:
_____Phone
_____Mail
_____E-mail
_____Visit websites

29) I respond to health care/drug ads I hear on the radio by:
_____Phone
_____Mail
_____E-mail
_____Visit websites

30) I respond to health care/drug ads I get in E-Mails by:
_____Phone
_____Mail
_____E-mail
_____Visit websites

31) I respond to health care/drug ads I see on the Internet by:
_____Phone
_____Mail
_____E-mail
_____Visit websites

32) I regularly visit my doctor/health care provider.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

33) Generally, I have interest in learning new technology.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

34) Generally, I have difficulty using new technology.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

35) Generally, I have difficulty with accessing healthcare information.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

36) Generally, I have difficulty making healthcare appointments.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

37) Generally, I have difficulty contacting healthcare professionals.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

38) Generally, I have difficulty accessing my medical records.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

39) I receive phone calls from physicians, healthcare providers, or vendors of healthcare products.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

40) I receive phone texts from my physicians, healthcare providers, or vendors of healthcare products.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

41) I receive regular mail from my physicians, healthcare providers, or vendors of healthcare products.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

42) I receive E-mail from my physicians, healthcare providers, or vendors of healthcare products.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

43) I receive website addresses from my physicians, healthcare providers, or vendors of healthcare products.
_____Strongly Agree
_____Somewhat Agree
_____No Opinion/Not Applicable
_____Somewhat Disagree
_____Strongly Disagree

44) On the Internet, I research health care products/providers using:
_____Google (or other search sites)
_____My doctor's website
_____My Insurer's (and Medicare, Medicaid) website
_____AARP (or other Senior Citizen group) website
Other:_____

APPENDIX B) Advertising Media and Response Figures

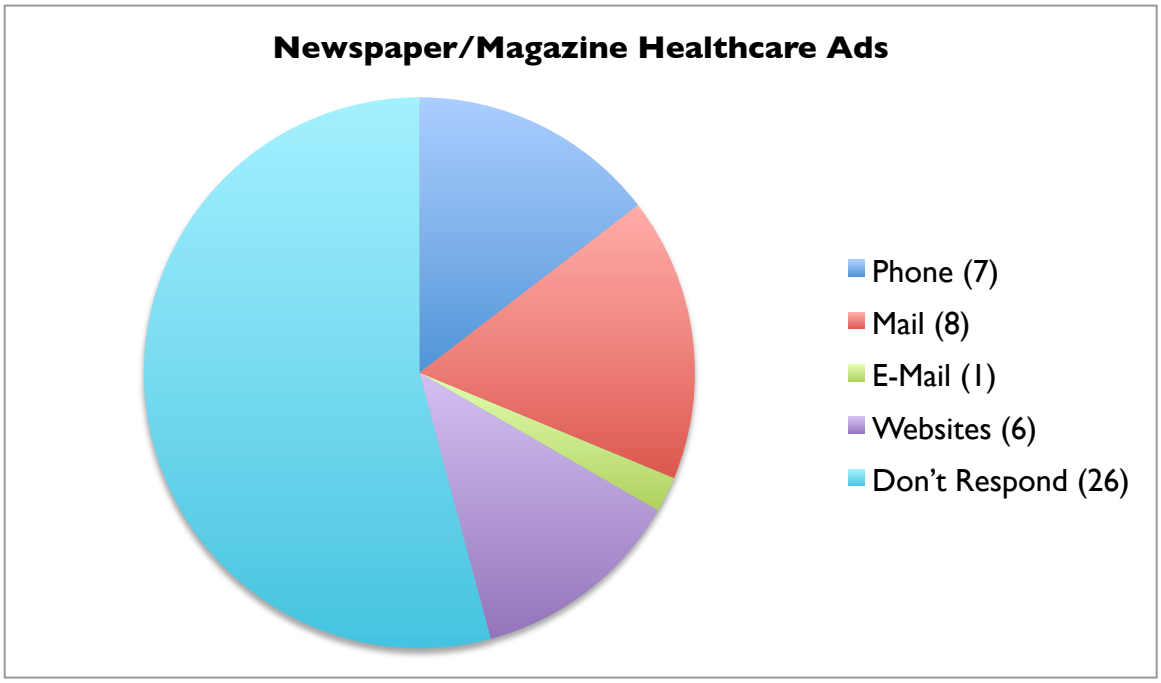

Figure 10) Newspaper/Magazine Healthcare Ads

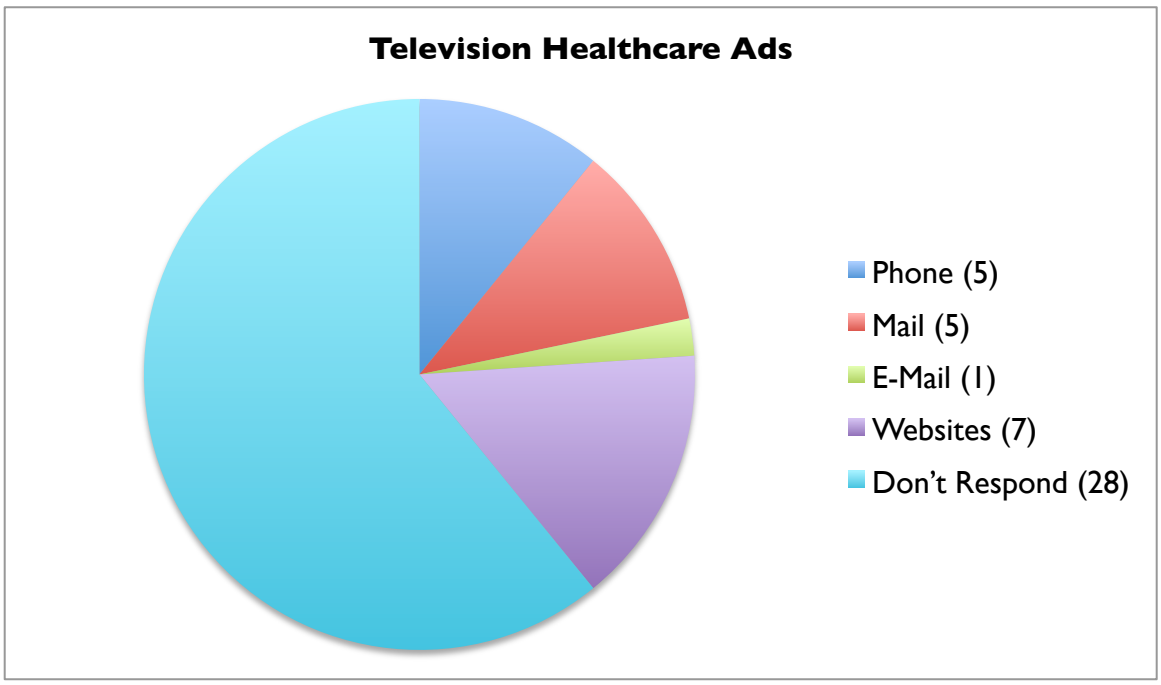

Figure 11) Television Healthcare Ads

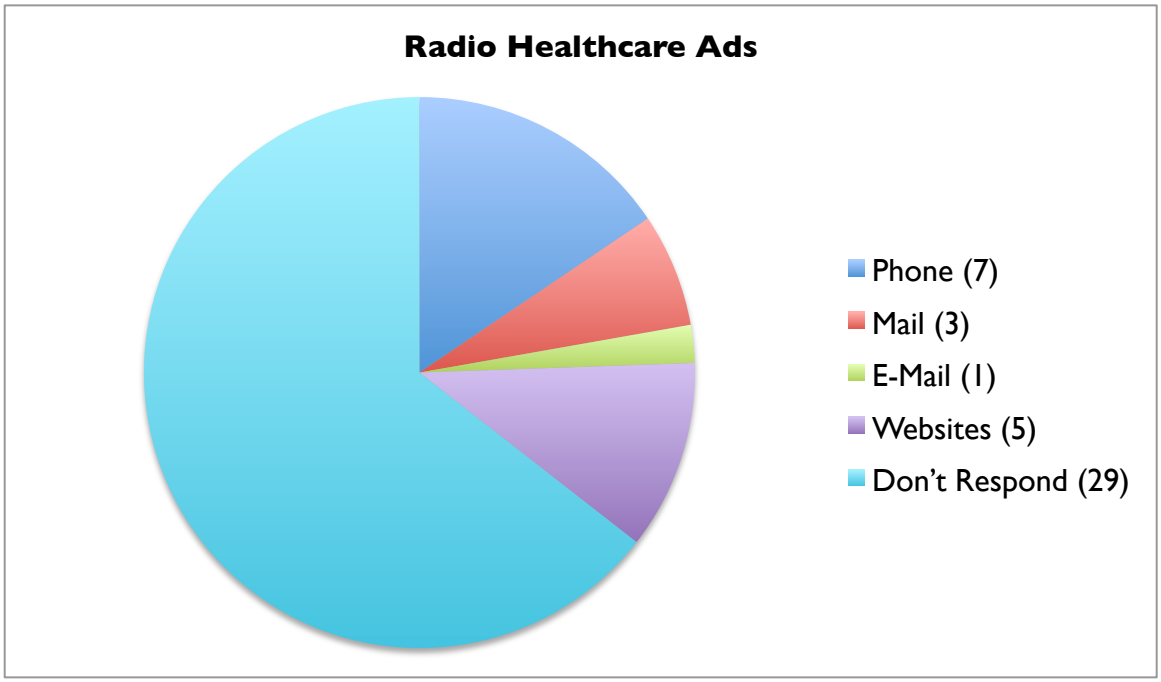

Figure 12) Radio Healthcare Ads

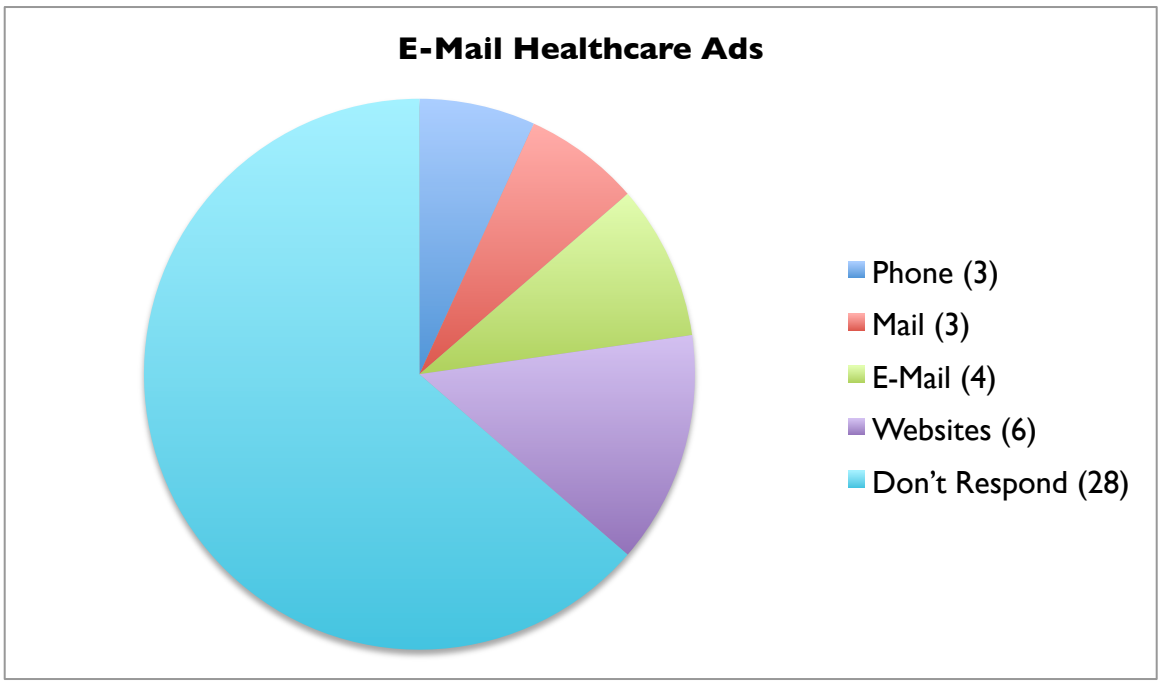

Figure 13) E-Mail Healthcare Ads

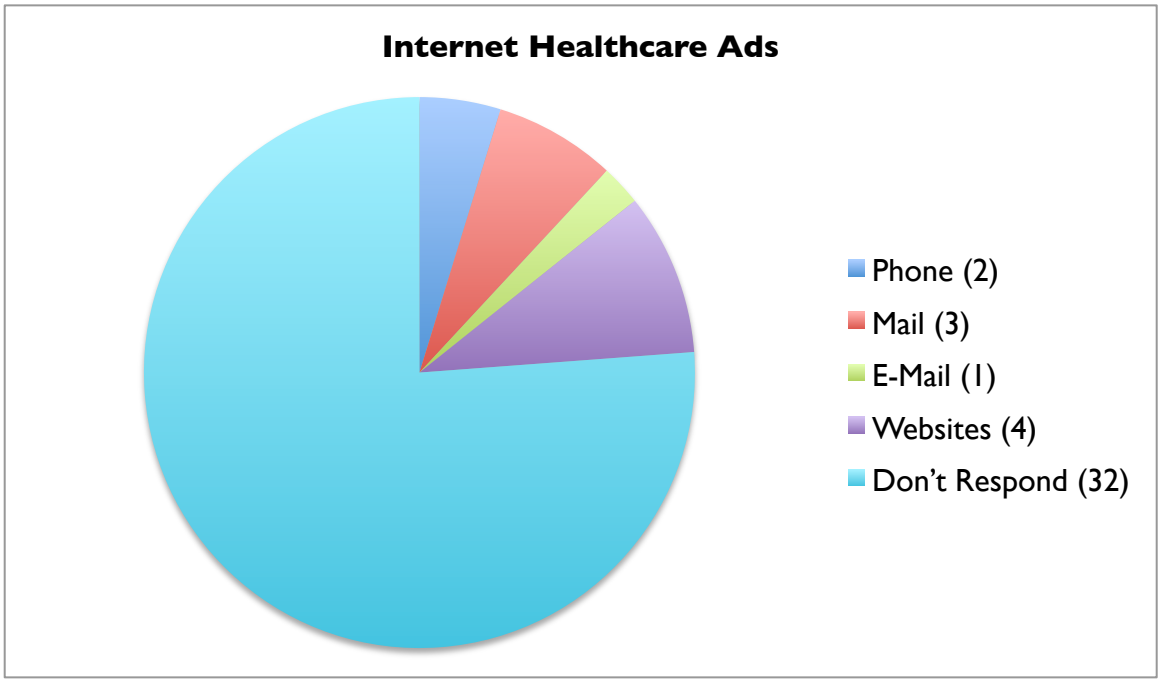

Figure 14) Internet Healthcare Ads

APPENDIX C) Methods of Learning Various Media

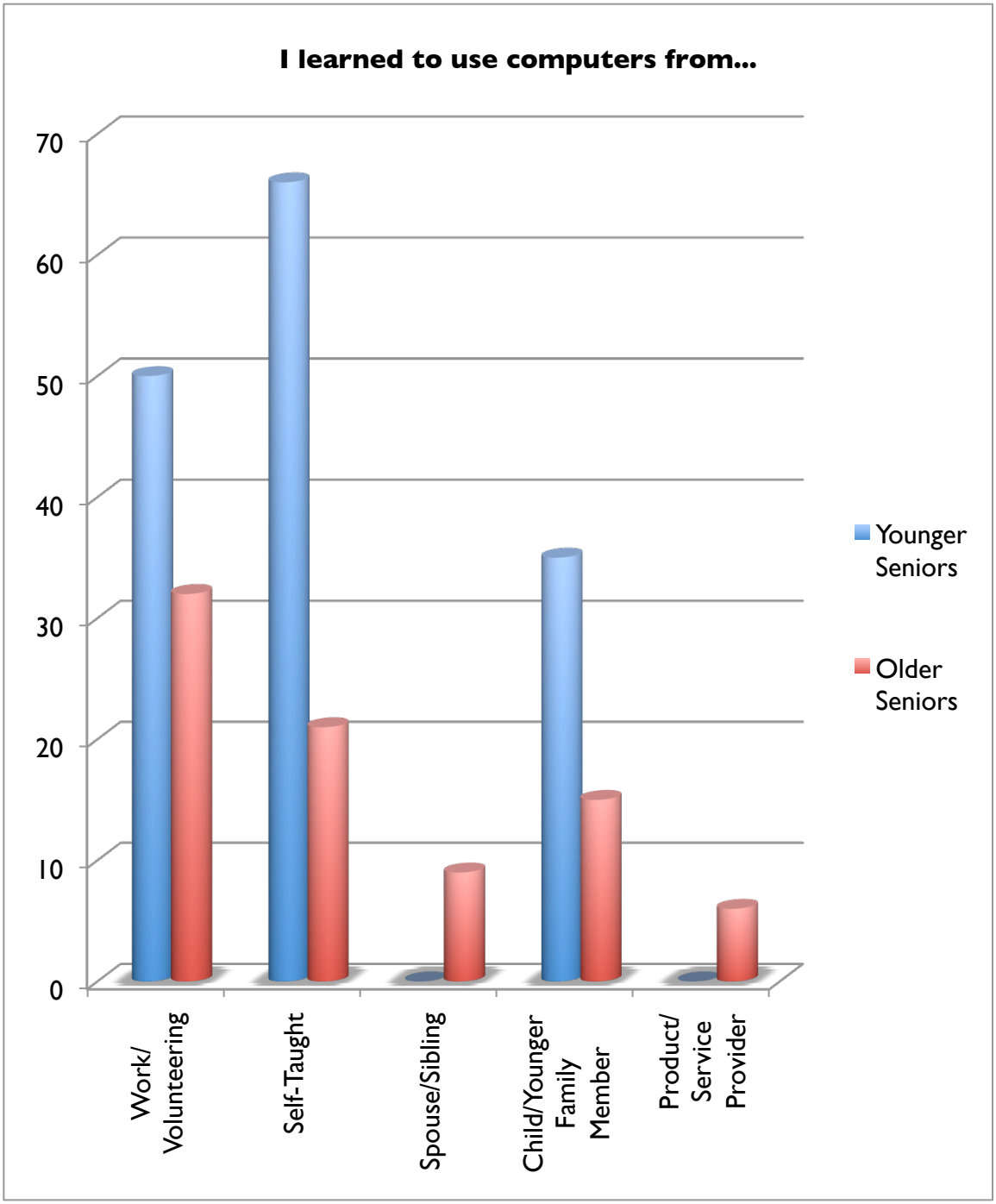

Figure 15) Learning Computers

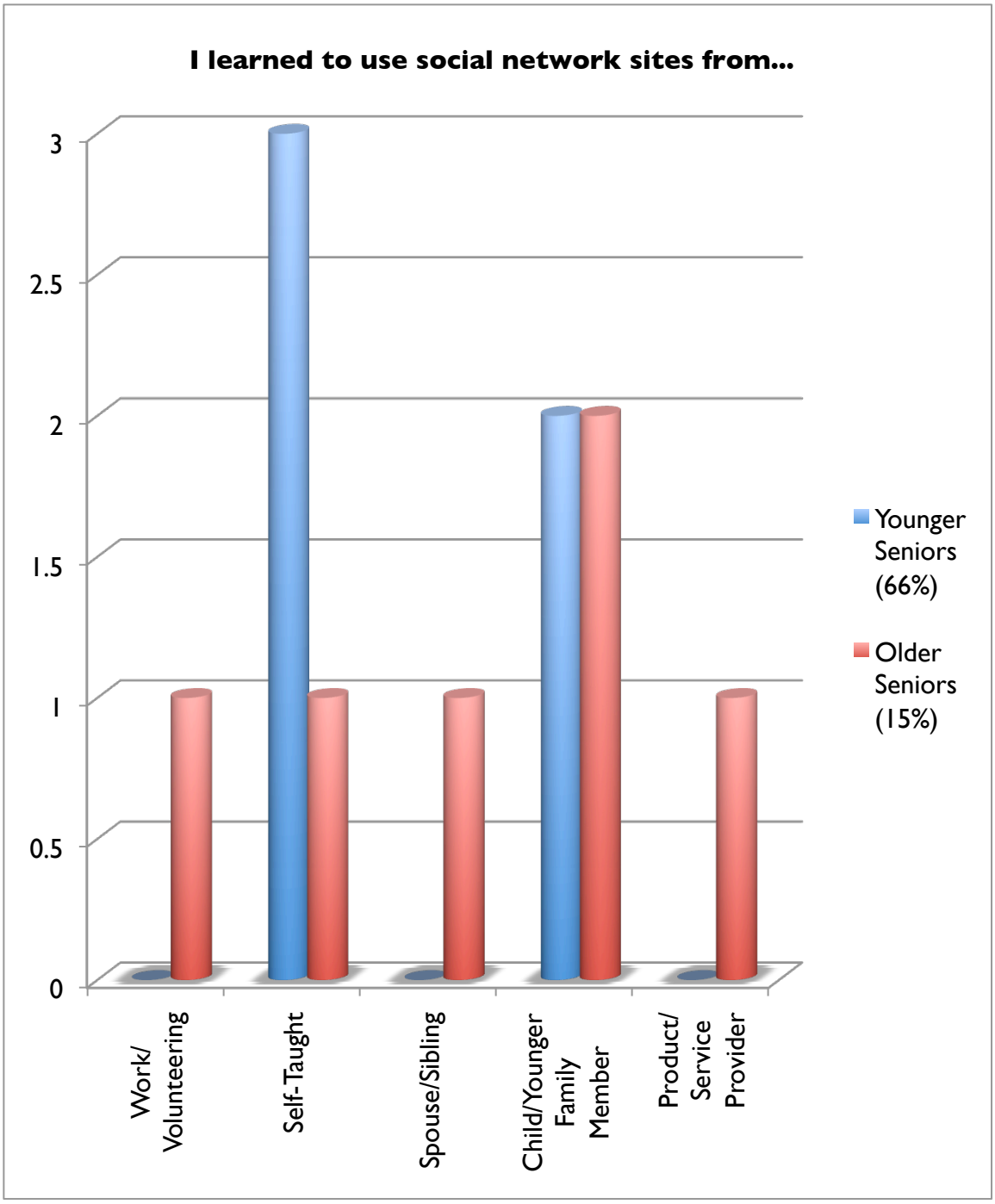

Figure 16) Learning Social Networking Sites

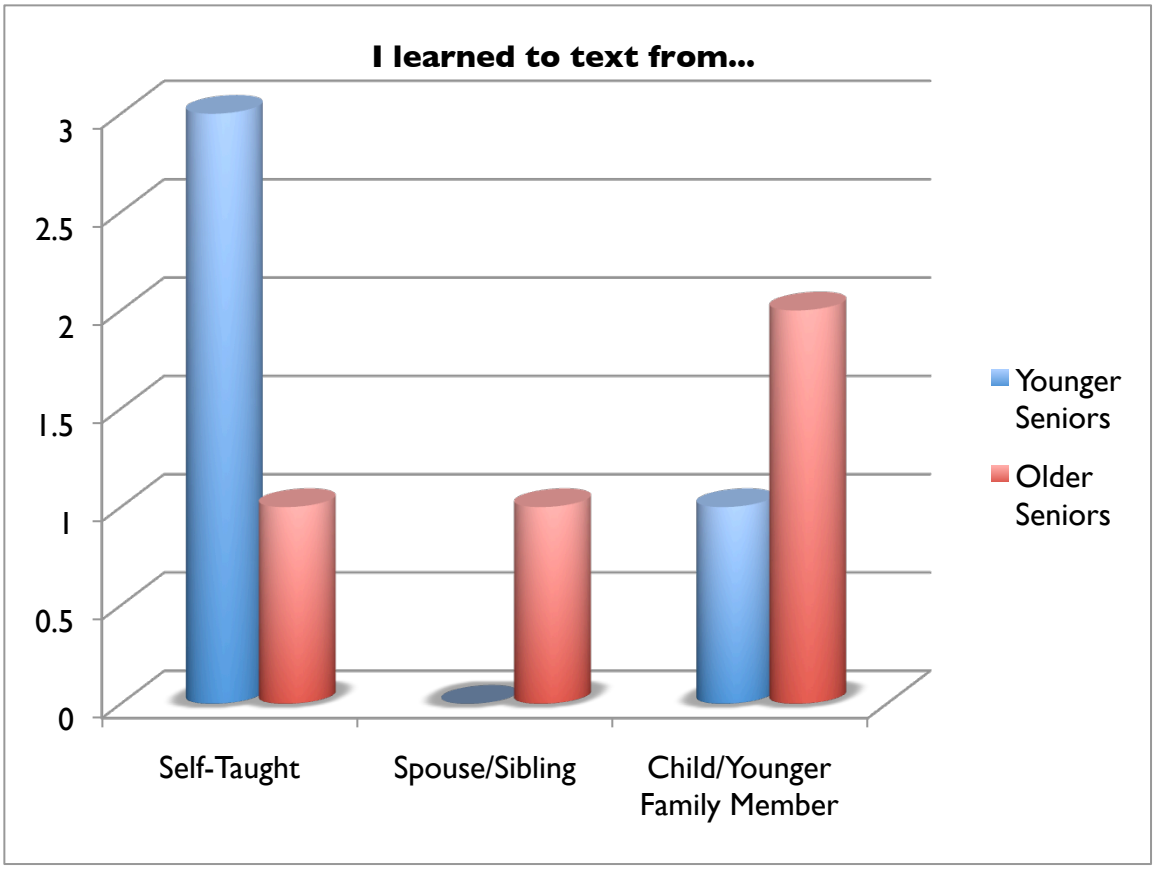

Figure 17) Learning Texting

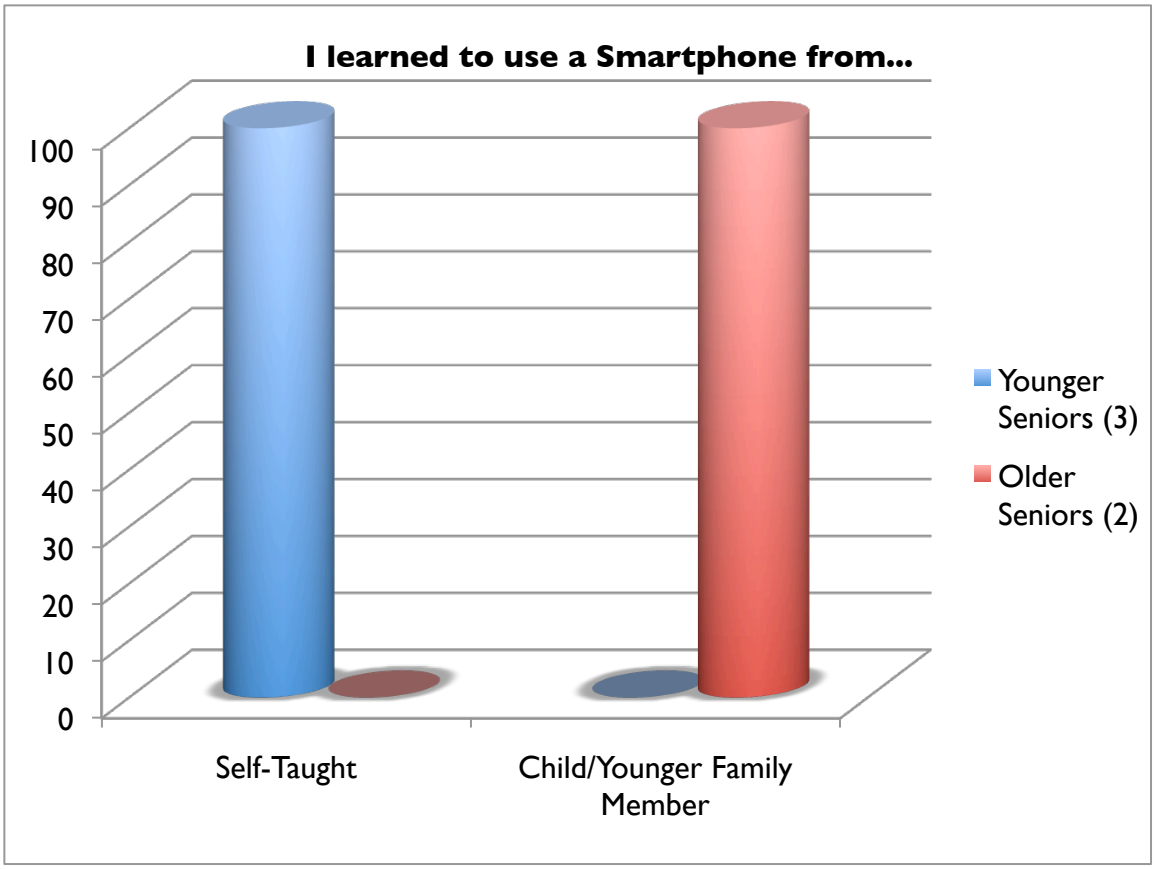

Figure 18) Learning Smartphones

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