

Aging in the Connected Home 2011

Executive Summary

Continental Automated Buildings Association (CABA)

December 2011



CABA and the following CABA Members funded this Research Project:





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The Continental Automated Buildings Association (CABA) is an industry association dedicated to the advancement of intelligent homes and intelligent buildings technologies. CABA is an international association, with over 300 major private and public technology companies committed to research and development within the intelligent buildings and connected home sector. Association members are involved in the design, manufacture, installation and retailing of products for home and building automation. CABA is a leader in initiating and developing cross-industry collaborative research, under the CABA Research Program.

The CABA Aging in the Connected Home 2011 research study is a collaborative, industry-funded research program that brought together organizations from the healthcare sector with connected home solutions providers. As Baby Boomers reach retirement age, 71 million Americans will be over the age 65, in which 90% indicate that they wanted to remain in their homes. As such, home healthcare services, as well as products designed to help the aging adult move through their home and interface with their home in a safe and efficient manner, have seen rapid growth in demand.

The objective of this study is to determine the key needs of the seniors and their caregivers as they seek to maintain their independence. The Framework for Social Impact is the methodology employed to identify these issues. Understanding the needs of seniors and their caregivers is vital to the design of products, services and home solutions that will enable the aging to maintain their independence in their homes. A thorough understanding of the unmet needs of aging seniors, and their caregivers, as well as the constraints that prohibit them from remaining in their homes, will provide the necessary stimulus for true innovation amongst healthcare providers and home solutions providers in optimizing the development, design and utilization of the connected home.

Organizations that participated in CABA's Aging in the Connected Home 2011 study included: Ascension Health, Ingersoll Rand/Trane/Schlage, TELUS Corporation, and United Health Group.

CABA commissioned The Innovation Partners, an independent market research and consulting firm, to conduct the research study.

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Background

As the 'Baby Boomer' bubble reaches its retirement years and beyond, the world will see an unprecedented rise in Americans over the age of 65. By 2030 71 million Americans will be over the age 65, according to the US Census figures. When asked about their preferences, 90% of elderly Americans indicated that they wanted to remain in their homes. As such home health care services as well as products designed to help the aging adult move through their home and interface with their home in a safe and efficient manner have seen rapid growth in demand.

The objective of this study is to determine, with statistical validity, the key needs of the seniors and their caregivers as they seek to maintain their independence. The Framework for Social Impact developed and introduced by Sandra Bates in The Social Innovation Imperative (McGraw-Hill 2012) is the methodology employed to identify these issues.

Understanding the needs of seniors and their caregivers is vital to designing products, services and home solutions that will enable the aging to maintain their independence in their homes. It is through a thorough understanding of the unmet needs of aging seniors, and their caregivers, as well as the constraints that prohibit them from remaining in their homes, which will provide the necessary stimulus for true innovation in this field.

Methodology

The methodology includes six steps (shown in the figure to the right - starting at the '12:00' position), only the first two of which were executed as part of the collaborative study. It is at the discretion of each of the participating companies to conduct the remaining steps of the methodology in order to maximize the value of the work done in Steps 1 and 2.

The methodology is based on needs-first approach to innovation which dictates that the needs of the ecosystem members must be identified before attempting to develop innovative solutions. Thus the first part of the process involves both qualitative and quantitative research to identify the areas of unmet need.

Audiences

This study focused on the seniors as the primary audience with a small sample added for 'aging in' adults - those that are in the 55-65 year age range. During the initial interviews, we discovered that it was equally important to talk with the

senior's adult child and/or their caregiver. It became clear that these individuals played a significant role in decision-making that pertained to the senior's living arrangements, medical care and other issues that have a major impact on the senior. As such, we explored both the Caregivers of seniors and Adult Children who were involved in the lives of their parents. We looked at a mix of ages, income levels, and types of caregivers including those that were related, not related, paid and unpaid.

We conducted interviews with experts in the field of senior advocacy, nursing home administration, and social work in order to understand the legal, regulatory, and social obligations for assuring the health and well being of the senior. We also interviewed this group to understand the key reasons that seniors ended up in nursing homes.

During Step 1, we identified the key contexts to study in addition to the audiences. We settled on studying the daily life activities of the senior as well as the context of a health care crisis and post-crisis activities.

From here, we conducted Step 2 which included qualitative interviews with both audiences to identify the needs, and quantitative surveys to test the importance and satisfaction of the needs.



Daily Living Hypotheses Tested

During the process of executing the study, we sought to identify opportunity in four major areas listed below. The data clearly show that this market is ripe with opportunity for value creation and that it is exceedingly possible for seniors to remain in their homes for the rest of their lives once several innovations take root.

The study was divided into two components - the status quo or daily life of the senior (daily living results) and the jobs that seniors struggle to get done after experiencing a medical crisis that required a trip to the ER or to the hospital (health care results). This section details the results of the non-medical hypotheses and opportunities identified.

Table 1: Hypotheses Tested - Daily Living

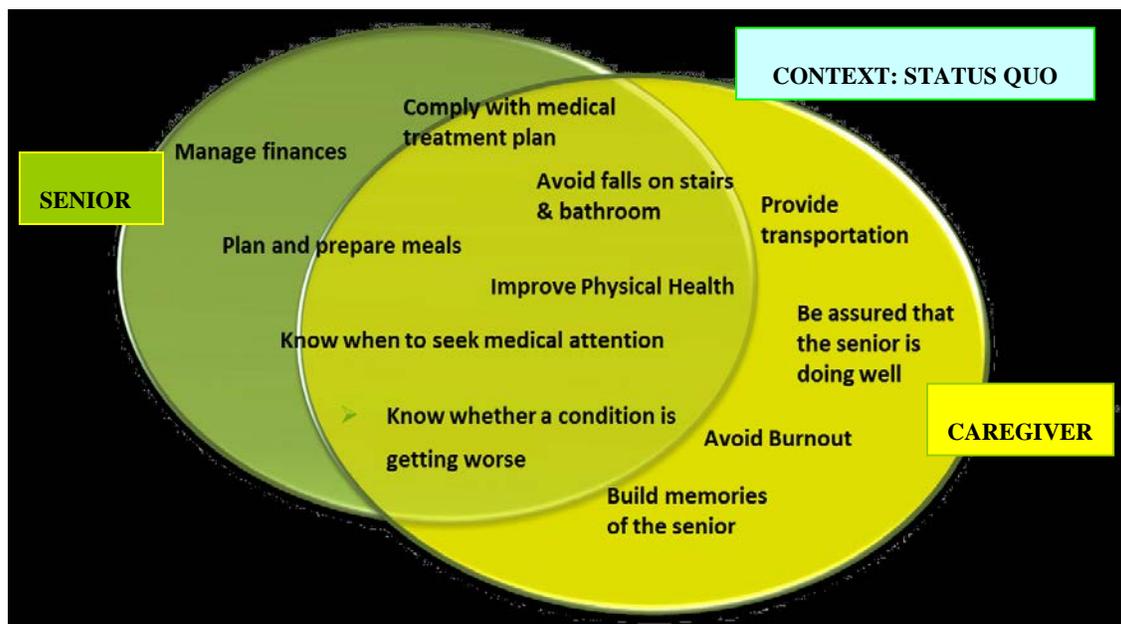
Job Area	Hypotheses. The funding partners believe that...	Confirmed?
Interface with/navigating through the home safely	Seniors struggle with being able to move about the home, interface with the home (i.e., with cabinets, doors, etc.), and be remain safe from falls.	CONFIRMED
Communicate with family, friends, and others	Seniors want to maintain communication with friends and family, especially as they are less able to drive and go visit people in person. Caregivers are concerned about how the senior is <i>really</i> doing, especially in the case of an adult child who does not live near the senior.	CONFIRMED
Improve overall health and vitality to enable the senior to maintain the lifestyle he/she desires	Seniors and their caregivers/adult children are still concerned about getting the right nutrition, being able to improve the physical fitness of the senior, and increasing the overall mobility and flexibility of the senior, especially in the joints.	CONFIRMED
Maintain personal safety and getting help when needed	Seniors and caregivers are concerned about the personal safety of the senior from both external threats of harm, as well as internal mishaps or accidents around the house. The concern is not being able to protect oneself or to let others know that there is a problem.	CONFIRMED

The data clearly show that this market has extraordinary opportunity among nearly all of the jobs tested. Although the market has seen numerous new products and services designed to help seniors address their key concerns with independent living, there is still a long way to go. The market is still extremely under-served.

Areas of Significant Opportunity (non-medical)

There were several areas of very high opportunity for new value creation for both seniors and their caregivers. High opportunity is defined as a job statement that is both extremely important and poorly satisfied. As shown in the diagram below, there is much agreement among the audiences about the high opportunity areas.

Among some of the key areas of concern is avoiding falls and overall navigation of the home. For those seniors with mobility instruments, the narrow hallways are not conducive to getting around.



The senior is looking for ways to stay engaged with friends and relatives and this becomes especially important when driving is no longer something available to him/her.

Overall the market is highly under-served with significant opportunity for value creation in five key areas of daily living:

1. Ensuring the seniors is getting proper nutrition
2. Helping the senior with financial planning, budgeting, daily financial needs, and planning for large unexpected expenses
3. Helping the senior maintain their mobility, joint flexibility and overall fitness
4. Let people know how the senior is doing
5. Managing chronic health conditions

In addition, after hospitalization the senior and caregiver want to get the senior back to his/her fitness level, restore functionality that was lost, and help the senior get back to their life before the medical incident.

As we explore the various areas of value that would serve both the caregiver and the senior, we find several key areas of potential.

The table below illustrates some ‘made up’ solutions that would address the needs of the seniors based on this data.

Table 2: Possible Solutions for Needs

<p>Quicken Silver</p> <p>Create a budgeting solution designed for the needs of seniors that can be shared between the senior and their caregiver and/or adult child:</p> <ul style="list-style-type: none"> • Learn how their finances are set up • Learn how to manage their finances online • Develop a budget that will meet their needs • Develop a plan for paying for large unexpected costs • Handle day-to-day personal finances such as paying bills, depositing checks, etc.
<p>Senior Joint Health</p> <p>Create a series of supplements and a Curves-like program that is tailored to the needs of seniors and building their joints and muscles; it could be staffed with a nutritionist and physical therapist:</p> <ul style="list-style-type: none"> • Maintain a desired level of performance in my joints • Improve my physical health, e.g., muscle tone, flexibility, stamina, cardio-vascular health, etc. • Have enough stamina for conducting daily activities
<p>The Senior iPhone</p> <p>Create a communications device that include video chat and enables the senior to get the jobs done they need to get done. This could be a series of ‘apps’ on an iPhone or Android that are tailored to the needs of the senior:</p> <ul style="list-style-type: none"> • Maintain relationships • Get help in an emergency • Let people know how I’m doing, i.e., reassure people I’m doing well • Communicate with others when the phone lines are down in bad weather
<p>Senior Fit Foods</p> <p>Create a series of pre-prepared foods that would be delivered to the senior every week. They can be pre-proportioned for the senior’s specific needs based on their health, chronic conditions, etc.:</p> <ul style="list-style-type: none"> • Plan meals • Prepare meals • Ensure the senior is not lacking any nutrients • Reduce trips to the grocery store • Determine what foods to eat to achieve health goals

These example programs are those that would be highly valued by both seniors and their caregivers. The good news is that there are plenty of existing platforms and existing companies that offer products very similar to what the seniors are looking for.

The challenge is going to be how to customize the services to meet the needs of seniors. For each of these different types of products and services, we have profiling and demographic information that can be made available as to what type of seniors has the highest opportunity in these areas. This information is available upon request and is charged based on the amount of data requested. This optional analysis is only available to the study participants and those who have purchased the study post-embargo.

Details of the Opportunity Identified

The following table illustrates the strength of the various jobs and the potential solution areas that are available. The details within each of these categories are found in the full results deck. Because these percentages represent all of the senior population studied, they indicate a significant market opportunity. Thus products and services that help the senior to manage their nutrition and improve fitness, manage their finances, retrofit their home and organize their homes to remove clutter and make the home safer will be well received by this population.

Emotional Jobs of Seniors and Caregivers

When it comes to the emotional jobs of seniors, one of the key findings is that seniors do not feel their age. In fact, according to a recent study by the Pew Research Foundation, entitled "How Old Do You Feel", adults in the 60-64-age range (often referred to as the 'aging in' population) are far from thinking about themselves as approaching 'senior-hood'. Individuals in their 60's perceive 'old age' to be 70 or older. The gap of perception actually increases, as the person gets older. People generally feel that they are 10-20 years younger than their chronological age.

The exception to this is when the person is in fair to poor health. In fact, the health of the senior is the most important driver in their perceived age as well as their rating of their quality of life.

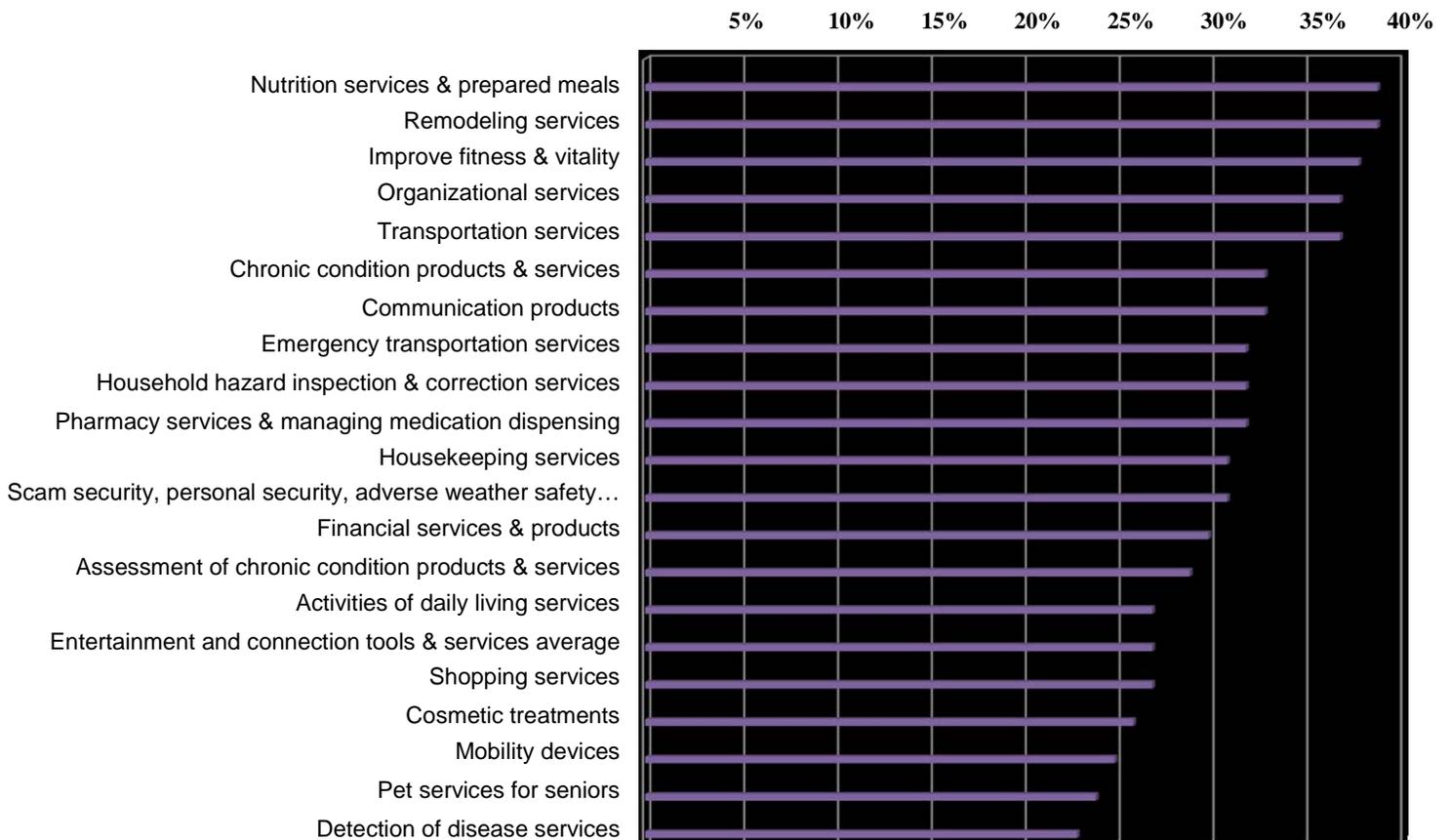
Table 3: Emotional Needs: Seniors and Caregivers

Senior Emotional Needs	Caregiver Emotional Needs
<ul style="list-style-type: none"> • Avoid feeling like a burden • Avoid being talked down to • Feel in control • Feel independent • Avoid feeling like an invalid 	<ul style="list-style-type: none"> • Avoid burnout • Avoid feeling sorry for myself • Build fond memories before the senior passes • Be appreciated by others

Summary of Non-Medical Findings

Seniors and their caregivers have a tremendous number of under-served needs in the course of day to day living. Organizations that seek to address these unmet needs with products or services designed not only to meet the jobs but the unique requirements of the senior population will see tremendous reward. This group is large and growing larger. A good size of this group has money to spend on discretionary items that would make their independent living more efficient and effective. The Adult Child influencer is another member that close attention should be paid to. They have significant influence in the senior’s decision making regarding these types of purchases.

Table 4: Areas of New Growth Potential for the Senior Market - Sum of High and Moderate Opportunity



Health Care Hypotheses Tested

The second part of the program explored the needs of seniors and caregivers when faced with a health care situation that required either a trip to the emergency room or a hospital stay.

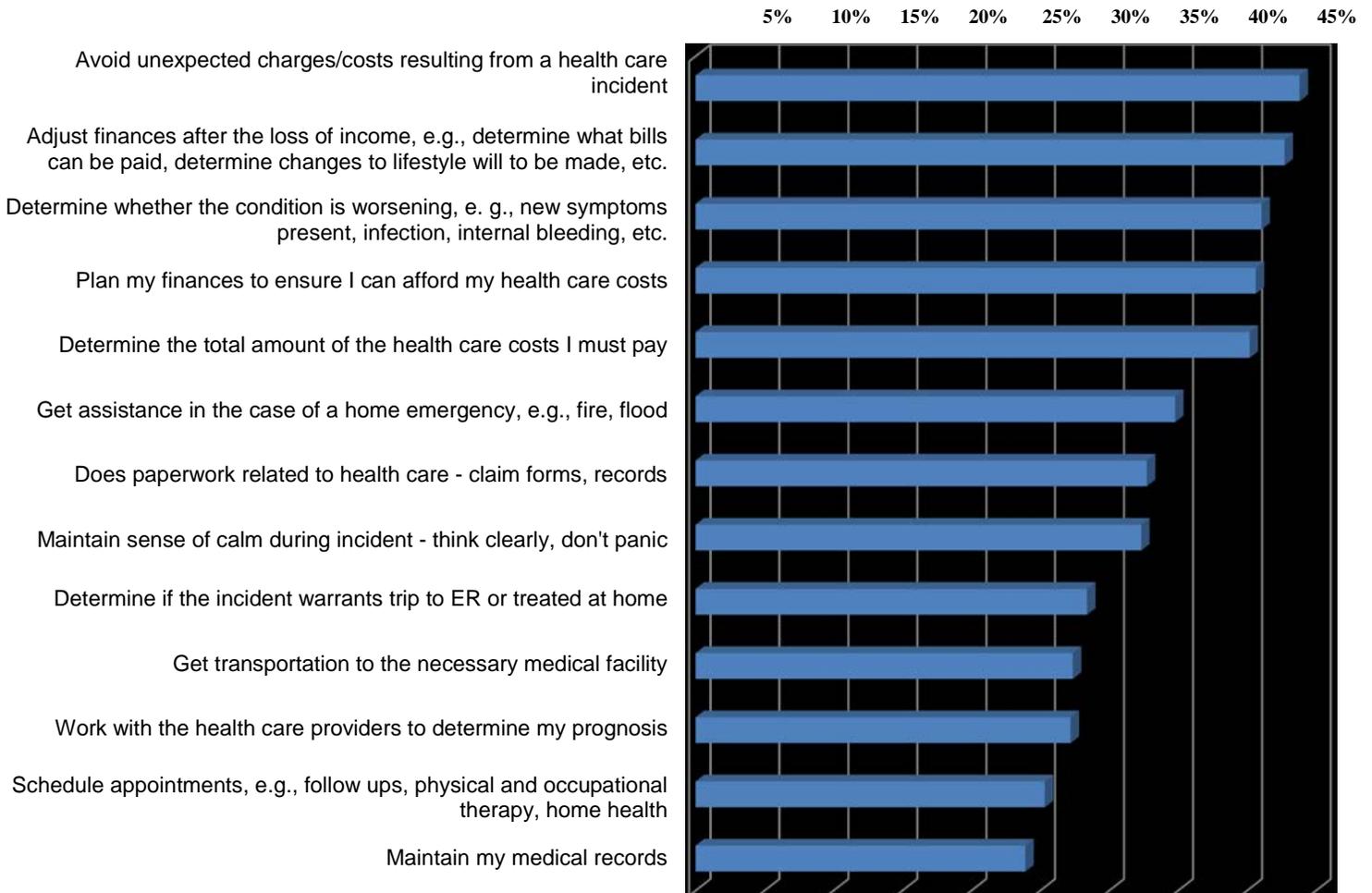
During the qualitative phase we identified the set of jobs that the senior is trying to get done while going through the medical crisis as well as the jobs of the caregiver during this phase. We also explored the needs of both audiences in the period following the medical crisis, when the senior was released from the hospital or from the emergency room.

All of the hypotheses were again confirmed in this area, in fact in many cases, the very high scores were a surprise in that the need was more under-served than expected. Most of the jobs in these two contexts (medical crisis and post-crisis) had very high percentages of both seniors and caregivers that found the jobs to be extremely important and not well satisfied at all. Nearly all of the jobs had over 20% of the population as **under-served (people looking for new solutions)**, yet many of them also have a high percentage that indicates they are ‘well satisfied’ with existing solutions. This indicates that while there are some solutions that are serving a portion of the population, there is still substantial room for improved products and services that will meet the identified needs of the seniors.

Table 5: Hypotheses Tested - Health Care Crisis

Job Area	Hypotheses. The funding partners believe that...	Confirmed?
Manage chronic health conditions	Seniors and Caregivers want to be able to manage the seniors' chronic conditions while at home but they don't have all the tools needed to do so.	CONFIRMED
Determine how the health care crisis will be paid and how much it will cost	Seniors and Caregivers are not clear about how much out of pocket costs they are responsible for and they worry about how these costs will be paid for, especially unexpected hospitalization.	CONFIRMED
Get help	Seniors and Caregivers worry about knowing what situations warrant getting medical help and how the senior will get help in an emergency. We expected that Caregivers would be worried about being notified quickly that the senior had experienced a medical emergency.	CONFIRMED
Get back to 'normal'	Returning to normal activity levels and recovering lost functionality was expected to be a concern, however, it was surprising to see how high this rated.	MORE EXTREME THAN EXPECTED

Table 6: Sum of High & Moderate Opportunity



Managing Chronic Conditions

Seniors and their Caregivers also have high opportunity around managing chronic conditions in a non-acute stage. Some of the key areas of opportunity include:

- Know when to seek medical attention for a chronic condition
- Ensure the senior knows what changes or symptoms to look for that indicate a problem or a worsening of the condition
- Adhere to the treatment plan for a chronic condition including medication, diet, exercise, etc.
- Ensure the senior understands the physicians' instructions for maintaining his/her health

- Be sure the seniors doesn't run out of medications
- Be sure the senior is taking their medications as directed, e.g., not skipping doses or hoarding medicine

Solution Areas to Consider

During interviews with nursing home administrators and home health care professionals, it became clear that there is a critical time frame between the time the senior gets out of the hospital and the time the senior receives professional care in the home that will ensure that the senior gets off to a good start.

A critical problem appears to be in the orders for home health care. These orders, at least in some hospitals, are written by the primary care physician (PCP) and not the hospitalist (the physician who releases the senior from the hospital). This can result in a several day delay depending on the organization, the day of the week the senior is released, and the coordination between the hospital system and the PCP. This gap of only a few days can mean the difference between a quick recovery and a re-admit to the hospital.

According to an article in the Archives of Internal Medicine in 2011, the authors note that while 20% of hospitalized Medicare patients are re-admitted within 30 days, there is growing evidence that "improved discharge planning and coordination and post-hospitalization care [can] reduce hospital readmission rates". This offers the possibility of "improving care while simultaneously reducing health care costs".

Value Creation Opportunities

Until the coordination of the senior's release from the hospital is tied directly to the ordering of professional home health care, the rate of re-admissions and the delay of recovering will continue. This should be a simple fix that all hospitals can benefit from implementing to save on the health care costs of re-admissions.

In the area of health care products and services, there is tremendous opportunity for new value creation. There are numerous new solutions coming to market every month - new products for managing care at home to new services that provide the necessary support for seniors and others with chronic illness. Some of the biggest challenges with these products and services are the issue of cost - who will pay for these solutions? In the health care arena, patients expect Medicare or insurance to cover nearly all costs; however, we all know that this is not affordable long term and if anything, Medicare will have to soon reduce how much it can afford to pay. Thus, for those who plan to create solutions in this area, business model innovation will be crucial.

Service Innovation Opportunities

There are numerous opportunities for value creation that can be provided by physical therapists, occupational therapists or a new role that is often referred to as a ‘health coach’ or transition manager. The roles of these individuals are highly underutilized according to the administrators we spoke with for this study. Why are these roles so under-utilized? It appears that much has to do with the reimbursement mechanisms for the health care system. In Chapter 7 of my book *The Social Innovation Imperative* the issue of health care business model and platform innovation is discussed. One of the greatest challenges in the health care space is that all of the health conditions are treated with the same business model and the same platform. For success to take hold in this area of transitioning the senior from the hospital and ensuring they can live independently, it is clear that a new innovative business model and platform must be used. To approach this area using the traditional payer model is not likely to be effective and will slow down the adoption process.

Take for example a program implemented by Seton Hospitals in Austin, Texas called “Safe Steps for Seniors”. This program is an 89-point functional home assessment that identifies potential issues that the senior may face if living independently ranging from safety hazards in the home to the likelihood that the senior could fall in the home whether due to their lack of stability or tripping hazards. The items covered in this assessment directly address a number of the opportunities identified in this study. The price tag is \$300. Yet, with the significant impact of cost savings by identifying potential issues that could cause the senior to incur very expensive hospital stays or ER visits, Medicare does not cover this type of assessment. Thus the senior must be able to afford to pay out of pocket, or the caregiver will have to pay for it. Based on the data we’ve seen in this study, this program should be very well accepted by seniors and their caregivers.

Innovation in the health care field must include business model transformation and the development of new platforms for service delivery that are outside of the traditional health care platform and business model that exists today if we hope to see these innovations take root in our lifetime.

Product Innovation Opportunities

When we look at how to address some of the critical needs of the caregiver - the ability to really ‘see’ how the senior is doing and understand if his/her condition has changed/worsened, it is clear that communication products can play a large role in addressing these needs. Given the rise of video communication

technologies, even through an iPhone, the technology is clearly there and is becoming widely enough distributed that telemedicine solutions should be ready to launch - the infrastructure is there. If I can see my son's face on my iPhone via Skype while I'm in Texas and he's in Afghanistan, and we can carry on a conversation with very little delay in the video feed, then it should be possible to monitor a senior's condition via webcam and something like Skype.

In fact, telemedicine is becoming an industry all of its own, with advancements in the technology needed to facilitate it. In some areas of the country where certain specialists are in high demand, seniors are able to go to a local nursing home's conference room to be 'seen' by a specialist several hundred miles away.

Caregivers vs. Adult Child Influencers

When reviewing the differences between caregivers and adult children influencers (who were not part of the day to day care of their senior parents), we found tremendous overlap in the needs (15 of the top 20 overlapped), however there are a few differences worth pointing out. At a macro level, Influencer opportunities are ~30% higher overall than Caregiver opportunities. The reasons are not definitively clear, but we can align several factors:

- Vast majority of both groups are immediate family and/or spouse, therefore likely feel similar levels of responsibility for the senior
- The Influencers are much less likely to live with the senior, or in close proximity to them, and therefore see and talk with the senior less frequently than Caregivers
- One could easily imagine how this combination of circumstances could lead to either lower satisfaction or higher importance ratings among Influencers, thereby driving the higher opportunity scores

Summary

There is significant opportunity for those who are looking to explore the ways they can serve the senior population. Whether a remodeling construction firm, makers of bathtub fixtures, physicians, makers of vitamin supplements, or creators of advanced technology, there is significant need for products and services that allow the seniors to maintain an independent lifestyle and for the caregivers or adult children to feel comfortable that the senior will be safe doing so.

With the boom in the senior population that is just around the corner, the rising health care costs, and the significant costs of nursing homes and long term care facilities, these solutions are not just 'nice to have'. They are a necessity.

For companies that take on the challenge, it is imperative to consider the business model and the platform on which the solutions will be delivered. Disruptive strategies will work best, especially when introduced outside the realm of the existing platform and business model. Although for those companies within the existing health care industry that are willing to venture out on new platforms and provide new business models, change will be possible from within and will drive rapid adoption throughout the market.

Table 7: Rank of High + Moderate Opportunity – Influencers and Caregivers

Attribute	Total	All Influencers	All Caregivers
Manage end-of-life care	1	1	1
Take care of the senior's health problems	2	2	11
Transitioning home	3	9	2
Navigate through the home	4	4	5
Manage senior's care at home	5	5	7
Assess the senior's needs	6	7	5
Coordinate the senior's care	7	3	15
Help the senior maintain their health	8	11	3
Get help for the senior	9	8	11
Ensure the senior's personal safety	10	6	17
Take care of an existing health problem	11	10	14
Make living arrangements for the senior	12	17	4
Help the senior enjoy life	13	12	8
Maintain a good diet	14	15	9
Maintain good personal hygiene	15	13	16
Manage the senior's healthcare costs	16	16	13
Help the senior interact with others	17	14	17
Manage my commitments	18	21	10
Help the senior manage finances	19	19	19
Do household chores	20	18	20
Ensure a safe and comfortable home	21	20	21



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