

# **Enhancing Airport Terminals for an Aging Population**

Harry P. Wolfe, Senior Project Manager  
Dr. Connie Thibeau-Catsis, Assistant Professor

Maricopa Association of Governments, Phoenix, Arizona, USA  
Arizona State University, Department of Architecture, Tempe, Arizona, USA

## **SUMMARY**

Older people's quest for mobility applies to long-distance travel as well as to shorter trips. However, even healthy people as they age experience certain physiological, sensory and cognitive changes that may make the use of airport terminals difficult. Planning airport terminals to reduce these deterrents may increase the propensity of older persons to spend their time and money on air transportation, and enhance their quality of life.

In 2001, there were about 12 million air trips taken by 35 million people 65 years and older in the United States. By 2025, the number of persons aged 65 and older is anticipated to increase to 63 million in the United States and 830 million worldwide, representing a lucrative air travel market.

The major deterrents to airport use by older persons, based on focus groups, research on aging, and airport visits and interviews, are walking, waiting and way finding. This paper makes recommendations to reduce these deterrents, to systematically establish senior friendly terminal design guidelines, and to garner the technical and financial support necessary to adapt airport terminals to make them more senior friendly.

## Introduction

According to the 2001 National Household Travel Survey, 12 million air trips were taken by people aged 65 years and older in the United States (Bureau of Transportation Statistics, 2003). While seniors represented 12.4 percent of the population in 2001, they only took 6.3 percent of the air trips (U.S. Bureau of the Census, 2002).

Even healthy people, as they age, experience certain declines in physiological, sensory and cognitive skills, which impair their ability to perform activities of daily living. (Scharlach, 2002) The underlying thesis of this paper is that the onerous nature of airports acts as a deterrent to air travel by older people. Conversely, if airport terminals can be designed to take into account the needs of older people, their propensity to use air travel may increase.

Older persons' desire to use air transportation can be viewed in the context of Abraham Maslow's Hierarchy of Needs. According to this theory, needs can be arranged in a pyramid as noted in Figure 1 (Gwynn, 1997). The lowest or most basic needs – physiological and safety – are located at the base. As you move up the pyramid, you reach progressively higher level needs: love, affection, belongingness, esteem, and self-actualization. Maslow's theory holds that individuals need to meet the lower level needs on the pyramid before they can move up and meet the higher level needs (Maslow, 1954).

If airport terminals can be adapted to make older people feel more safe and secure, and senior air passengers are treated respectfully as valued customers, then air transportation provides a means for achieving the higher level needs and a higher quality of life. Love, affection and belongingness may be achieved by visiting friends and relatives in distant places, which is particularly important as older people lose their close friends. Furthermore, air transportation can fill a void for older people as they retire and seek activities to add meaning to their lives.

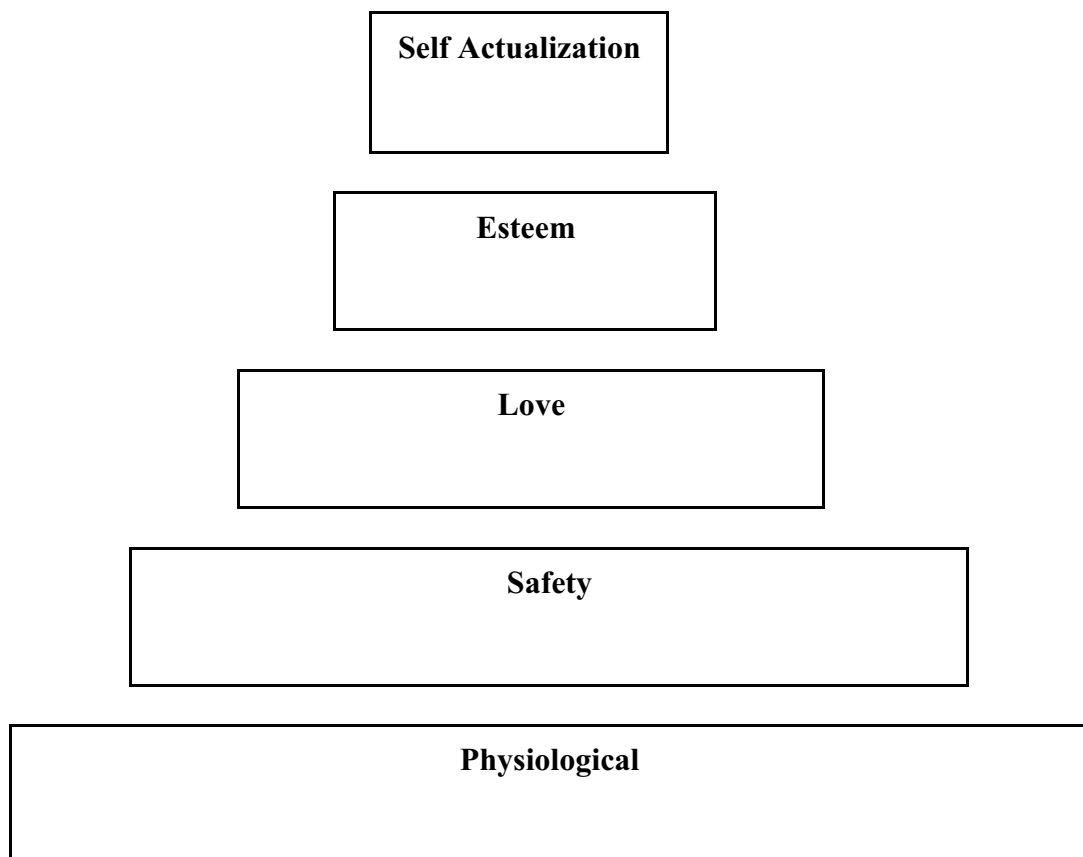
The aging of the burgeoning baby boomer population represents a potential lucrative air travel market. By 2025 the percent of the population aged 65 and over in the United States is forecast to increase to 18 percent or about 63 million persons. (U.S. Bureau of the Census 2003). Worldwide, this age cohort is anticipated to account for 10.7 percent of the projected population in 2025 or about 835 million people. (U.S. Bureau of the Census, 2003). Table 1 ranks the top ten countries in the world by the absolute number of people 65 years and older and by the percentage of population in this age group.

The needs of older people are different from those of the disabled. While the disabled are acutely aware of their physical limitations (Coughlin, 2002), older people, as they age, gradually experience reductions in mobility, agility and stamina and may be unaware of or even deny the existence of these problems (Tingley, 2003). Older people also cherish their independence (Pike 2003), don't want to be viewed as disabled even when their mobility is diminished and reject the use of a wheel chair. Finally older people experience cognitive changes which may make it more difficult to find their way through airport terminals. (Allen, 1999)

The following four methods were used to evaluate the types of enhancements that would make airport terminals more conducive to use by seniors.

1. A focus group was held at Phoenix Sky Harbor International Airport in February 2002 to identify the major problems confronted by seniors at airports.

**Figure 1**  
**Maslow's Hierarchy of Needs**



Source: Robert Gwynne, University of Tennessee at Knoxville, 1997  
<http://web.utk.edu/~gwynne/maslow.HTM>

**Table 1**  
**Countries Ranked by Projected Total Number of Persons 65 and Older**  
**and Percent of Persons 65 and Older in 2025\***

<b>Country</b>	<b>Number of Persons 65 and Older</b>	<b>Country</b>	<b>Percent of persons 65 and Older</b>
China	198,388,459	Japan	28
India	106,335,720	Italy	24.9
United States	63,523,732	Finland	24.6
Japan	33,659,557	Germany	24.6
Indonesia	27,750,666	Bulgaria	23.2
Russia	25,094,309	Greece	23.2
Germany	19,812,942	Sweden	23.2
France	13,980,783	Austria	22.9
Italy	13,896,091	Belgium	22.9
United Kingdom	12,996,202	Czech Republic	22.9

\* Only includes countries with a total population of one million or greater in 2025.

Source: Table 094, Midyear Population by Age and Sex, U.S. Bureau of the Census, International Data Base 2003.

2. Research was conducted on aging and inferences were drawn on the implications of aging on airport terminal design.
3. Visits were made to airport terminals around the United States including Phoenix, Los Angeles, San Diego and Denver, and they were evaluated in terms of ease of use by seniors.
4. Personal interviews were conducted with seniors to identify the problems they experienced using airport terminals.

The methods used and described above led to the conclusion that the major problems confronting seniors at airports are walking, way finding and waiting. These problems are amplified during air trips because such trips involve the use of origin and destination airport terminals, and on occasion, an intermediate airport where connections are made. The following sections elaborate upon these problems and identify potential enhancements to airport terminals to make them more conducive to use by seniors.

## **Walking**

Walking through airport terminals involves traversing horizontal, vertical and diagonal space. The walking distance involved, is dependent upon the type of airport terminal design. Linear terminals, which are designed to minimize the distance from where the passenger is dropped off at the terminal to the gate, are the easiest to negotiate. In the pier concept, concourses often radiate from a central terminal or terminals with gates on either side, and walking distance is maximized (Federal Aviation Administration, 1971). One airport design method for minimizing walking distances in the pier terminal concept is to construct multiple short piers radiating out from a central terminal. This is the design used at Los Angeles International Airport that quite effectively reduces walking distances.

Walking on the same terminal level involves traversing horizontal space, and is generally facilitated by assistive mobility devices such as carts and moving sidewalks. While carts enable seniors to traverse long distances without the use of a wheel chair, they may be difficult to board and not be accessible to all parts of the terminal. To be most effective, electric carts should be selected based on ease of boarding; and the areas in which they are permitted to operate should be expanded.

Moving sidewalks are not as helpful as carts because they require standing and may create balance problems as the sidewalk moves or the traveler steps on to or off of the device. For seniors who use walkers, the moving sidewalks may not provide adequate room for travelers who wish to pass on the left. The entrance and exits of moving sidewalks should be clearly marked and the audible announcements used to signify the end of the sidewalk is approaching.

Because terminals are generally multi-level, reaching the gate area often requires moving from one terminal level to another, and involves traversing vertical space. While steps and escalators are often used, the likelihood of falls exist, which tends to favor the use of elevators wherever possible. Signs that clearly designate the location of elevators and

numbers that assist in identifying the appropriate elevator are crucial enhancements for airport terminals.

Traversing diagonal space is required where grade changes occur on the same terminal level (Walton, 2003). This is prevalent at many airports, and is particularly common when disembarking an aircraft and using the jetway bridge. While it may be impractical to avoid all grade changes in the terminal, they should be minimized to the maximum extent possible; or carts and/or moving sidewalks should be used to help traverse such diagonal space.

## **Way Finding**

While way finding in airport terminals can be a challenge for people of all age groups, it may be particularly daunting for older people. Research has been conducted that shows that the cognitive changes that accompany aging have a detrimental impact on the ability to navigate (Allen, 1999)

Most airports rely on “You are Here” maps to facilitate way finding. Too often these maps are too complex and fail to provide an effective simple guide for traveling to the gate (Allen, 2003). To be of legitimate use to seniors, care needs to be taken regarding the placement, orientation, color, text and size of “You are Here” maps.

One potential enhancement to facilitate way finding would involve the application of advanced technology. Global Positioning System (GPS) units for assistance in way finding have become common features in automobiles. The application of GPS devices, or similar technology, could facilitate finding one’s way in the terminal.

While enhanced maps and technology can facilitate way finding, seniors may still prefer human guidance. Many large airports have volunteers to assist passengers in finding their way through terminals, but the uniforms worn and the procedures used vary from one airport to another. Some sort of standardization – uniform, badge, insignia --to enable a volunteer to be immediately recognized regardless of the airport, would heighten the visibility of these individuals. It would also make more people recognize the existence of these types of volunteers and promote the program.

A particularly important way finding issue is the need for appropriate terminal lighting. Lighting should be of adequate intensity while avoiding glare. More research needs to be conducted to develop illumination guidelines for airport terminals.

## **Waiting**

Prolonged waiting poses a problem for seniors in airport terminals. Lengthy queues are often involved when a passenger checks baggage at the terminal curb, at the ticket counter inside the terminal and during security screening. A potential solution to this problem is: to provide a seating area for seniors immediately at curbside, inside the terminal adjacent to the ticketing area, and adjacent to security screening areas. While seniors remain

seated, an administrative procedure using some type of priority system could be employed to avoid waiting in line. This could involve providing passengers with a number to determine their priority for processing; or a giving a reservation time signifying when they should approach the baggage check area, ticket counter or security.

In the baggage claim area, seating is also needed, but care needs to be given to designing and arranging the seating so as not to interfere with airline and airport baggage operations. There also needs to be an administrative process for notifying seated older people that their baggage has arrived.

The choice of seats in the terminal, need to take into account the unique needs of older people. They should: Have arm rests to make it easier for individuals to get up; be positioned at a level that facilitates sitting down; and be adequately illuminated to enable the passenger to read while waiting.

## **Conclusions and Recommendations**

It is clear that the aging process deters older people from using airport terminals; and that enhancing airport terminals to reduce these deterrents can increase the propensity of seniors to use air travel and increase the revenues to airports and airlines. It is estimated that a mere 30 percent increase in senior air trips would result in 6 million more trips a year in the United States, and a potential additional \$120 million and \$900 million in airport and airline revenue respectively (Wolfe, 2003).

A three pronged approach is recommended to begin the process of enhancing airport terminals to make them more conducive to use by seniors. This involves:

1. Holding a workshop to establish uniform guidelines for airport terminal design that will accommodate the needs of seniors, but also make it easier for all age groups to use air travel. While the research conducted in this report suggests certain terminal enhancements that could be undertaken, it is important to engage experts in terminal design and geriatrics, and airport and airline operations, to systematically establish uniform standards that are practical and supportable. Standards would include, but not be limited to the design of the baggage claim area, ticketing, terminal illumination, elevators and escalators, and moving sidewalks.
2. Conducting an inventory of airport terminals in terms of the guidelines established to gauge the extent to which they are senior friendly and to identify specific deficiencies. Such an inventory would need to be sponsored by and/or have the support of airport organizations such as the Association of American Airport Executives (AAAE) and/or the Airports Council International (ACI). In recognition of the international dimensions of the problem, the International Civil Aviation Organization should also be involved.
3. Recommend airport terminal enhancements to address the deficiencies noted above. These enhancements could be undertaken incrementally as a normal part of

the airports' continuing airport improvement program; and funded through the Airport Improvement Program in the United States and by other government funding programs in other countries. Funds controlled by the International Civil Aviation Organization (ICAO) could also be earmarked to ensure that countries throughout the world would have the funds to enhance their airport terminals in anticipation of the wave of older travelers in the years ahead.