Planning the Intergenerational Airport:
Making the Airport Better for Everyone

Design Category: Airport Management and Planning Challenges

The University of Texas at Austin

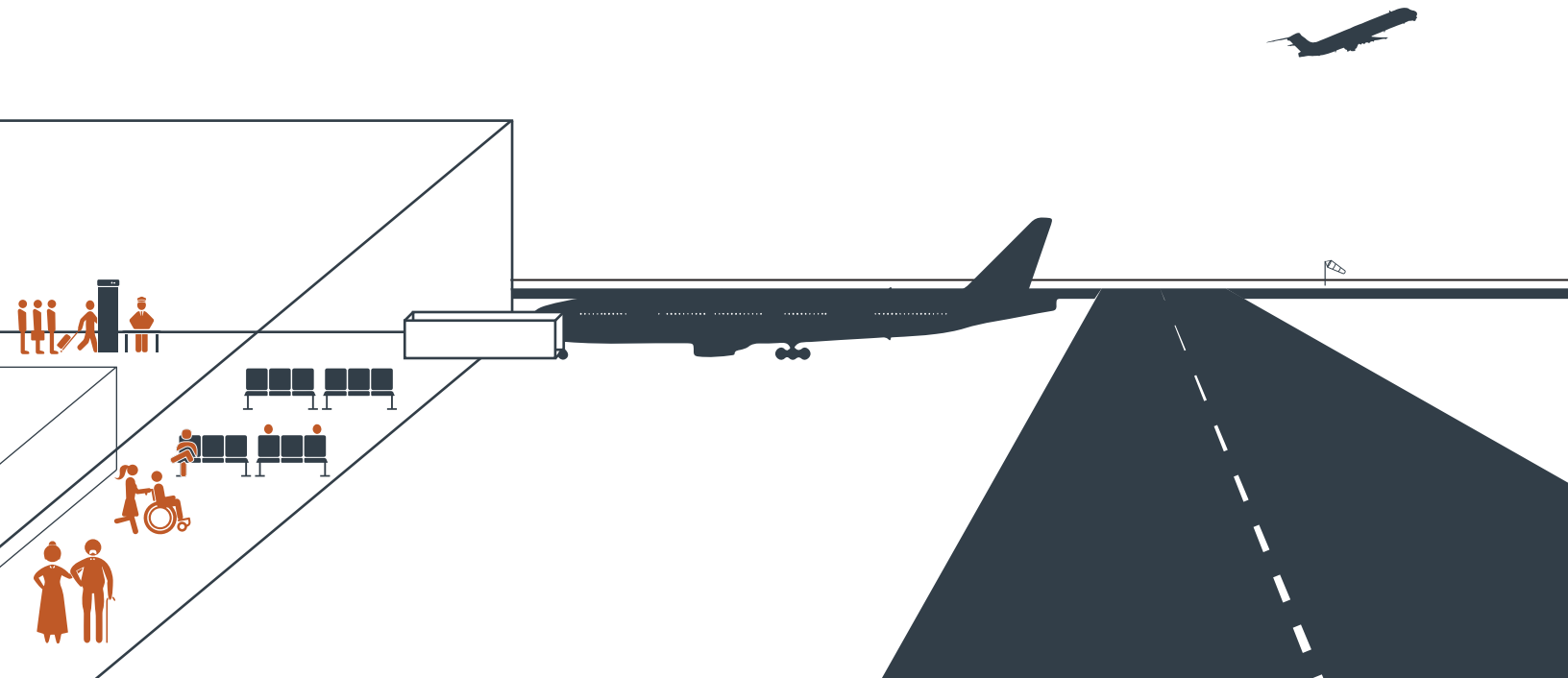
Team Members

Andrew Asgarali-Hoffman
Caroline Bailey
Ryan Berrier
Amy Combs
Samuel Day-Woodruff
Rebecca Fleischer
Coleen Gentles
Anna Lake-Smith
Allison Long
Maggie Moore
Karen Peris
Nolan Stone
Saul Vazquez-Mejia
Tahnee Yoon

Number of Undergraduates: 0
Number of Graduates: 14

Advisor

Dr. Sandra Rosenbloom



EXECUTIVE SUMMARY

The United States, like most industrial nations, is rapidly aging. Today almost 44 million Americans are 65 or older; the number of seniors will increase to more than 88 million by 2045 (US Census, 2016). A graduate class in Community and Regional Planning investigating a key issue under the Category: Airport Management and Planning Challenges, which focuses on solutions to the unique problems of aging air travelers addressed the following questions: Are America's airports and airlines ready for the coming Silver Tsunami, as the rapid aging of the U.S. (and the world) has been called?

To gain elevation on these issues, we assessed the limited literature on the needs of senior air travelers as well research on the travel patterns and needs of older people in general, and as pedestrians in particular. We then utilized this research base to inform the way we conducted five focus groups with diverse older people in Austin (TX), undertook a site visit to the Dallas-Ft. Worth airport, and developed five case studies of airports that may represent best practices in the industry. We structured our work around the concept of links in the chain of travel.

Our research suggests that many airports do not fully understand the challenges posed by senior air travelers. We found that some challenges permeated all links in the airport chain of travel while some were relatively unique to specific links in the chain. We therefore suggest two categories of specific strategies; those that affected older travelers in multiple links in the chain of air travel, and those that address more particular problems, both land- and air-side. Finally we suggest important policy changes that airport operators, in conjunction with the airlines, should seriously consider, especially to respond to the opportunities offered by new technology from phone apps to social media.

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PROBLEM STATEMENT AND BACKGROUND OF DESIGN CHALLENGE

PROBLEM STATEMENT

The population of the United States is rapidly aging. Today one in seven Americans are over 65; within a few decades seniors will comprise almost a quarter of the total population. In 2002, when seniors represented 11% of the population, they accounted for 6.7% of all air trips over 500 miles (National Household Transportation Survey data we analyzed). If the same ratio persists, by 2045 seniors will account for roughly 13% of all air travel. There is, however, substantial indication that seniors will take an even greater number of air trips per capita in the future. Seniors have greater net wealth and higher levels of education than any previous generation; not surprisingly they express great interest in increased leisure travel. In addition, seniors stay longer in the work force, continuing to make many more business trips than people of their age did just a decade ago.

There is little evidence, however, that America's airports are prepared for both the challenges and the economic opportunities provided by an aging pool of increasingly affluent air travelers. Challenges face senior travelers at every link in the air travel chain from the moment they begin to plan their trip, to arriving at curbside or at a parking garage, to check-in, through security to their boarding gate, at connecting airports, and when arriving at their destination. The challenges are multi-faceted and not easy to address. Seniors, more than other travelers, want comprehensive information about every link in their air journey *before* they travel but find it hard to obtain. Seniors are rarely disabled and often eschew wheelchairs, yet they may have trouble walking long distances, particularly if there is no place to sit along the way. Older travelers often find it difficult to stand in queues, maneuver in crowded environments, handle heavy baggage, find their way in unfamiliar places, and overcome *destination anxiety*, the fear of

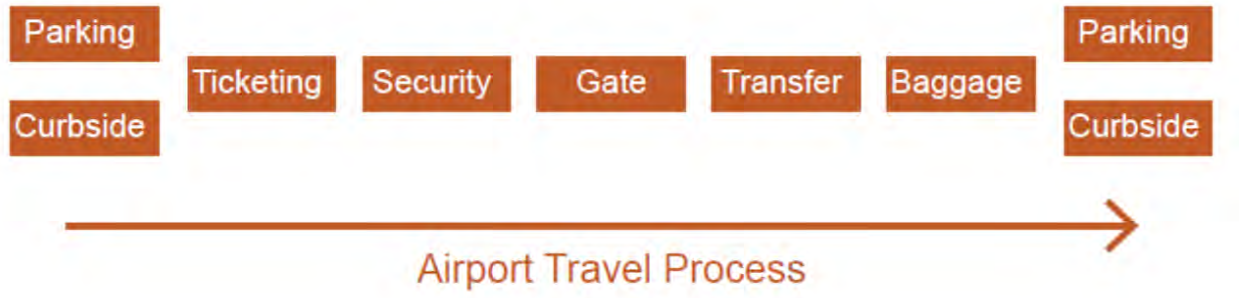
not knowing how to get to where they need to be. At every state of their air journey older travelers face a challenging environment not designed for or responsive to their needs.

It is not clear that any airports have fully recognized let alone comprehensively addressed the problems that senior air travelers face. Airports and airlines are only required to meet the needs of people with disabilities under the 1990 Americans with Disabilities Act and the 1996 Air Carrier Access Act; the airlines respond by providing wheelchair service or occasionally cart service. Some airports, like Phoenix and Las Vegas, augment the services provided by the airlines in various ways to meet the needs of all travelers who need assistance. It seems clear, however, that neither the airlines nor the airports are addressing the full range of problems and barriers that airports create for older travelers.

It is crucial to find ways to respond to the physical barriers that face older travelers at every single link in the air travel chain in current airport facilities. Newer terminals, of course, provide more options and pose fewer problems for seniors. But new or remodeled terminals are the exception, rather than the rule. Airports need to identify a series of operational and physical changes and improvements for existing terminals and facilities, not only to provide appropriate service to all air travelers, but because doing so has a strong economic dimension. Senior travelers have, research shows, substantial disposable income and an inclination to spend it at airports as well as at their travel destinations. Yet they are often so stressed by the difficulties they face in traversing the airport that they cannot relax enough to shop or eat at airport businesses.

To address these issues we view air travel as a series of connected links in an air travel chain, in somewhat the same manner as does ACRP Synthesis Report 51 (2014), one of the few research projects to focus on the problems of older travelers. A senior traveler's journey cannot

be successful unless the problems in all links of the travel chain are addressed. The figure below illustrates how we view the links in the air travel chain.



We take a slightly different focus, however, than this ACRP Synthesis. First, we identify the problems common to multiple links in the chain, such as difficulties in wayfinding (choosing a path through the built environment by using sensory cues) or walking long distances; then we identify problems specific to individual links in the process, such as lifting luggage onto bagwells or security tables. Second, ACRP Synthesis 51 (2014) evaluates problems in getting to and from the airport from the traveler's original destination (home, hotel, etc.); we felt that this analysis was too broad for our resources and we only focus on the parts of the travel chain that begin or end at the airport.

We base our analysis on five sources: the limited literature available on air travel by seniors, research on the mobility problems of older travelers in general and particularly as pedestrians, five focus groups with diverse seniors in Austin (TX), a visit to the Dallas-Ft. Worth airport, and case studies of the services provided (or not) to seniors at six airports. We then suggest ways to address each problem, to encourage the development of specific innovations, and to finance our suggested improvements.

Because ACRP awarded a contract in late 2014 to a consortia of researchers to address wayfinding issues in airports (ironically using Austin's airport as the case site) we do not focus

specifically on sign, architecture, and design solutions to wayfinding problems. We do focus on one element of wayfinding, information kiosks. In addition, ACRP has only recently awarded a research contract to study the problems of older travelers at airport; we hope our insights and suggestions will prove useful to those researchers.

BACKGROUND

In 2045 almost one in four Americans will be over 65 (US Census, 2015). Seniors are more active travelers today than ever before (Rosenbloom, 2009) and this trend is likely to strengthen over the next four decades. In 2001 (the last year for which long distance travel data are available) Americans over 65 took 11.2 million air trips over 500 miles (2001 NHTS data we calculated for this study).

A variety of socio-demographic trends will increase not only the number of senior air travelers but also their share of all air passengers. First, seniors are more likely to remain in the work force today long past their 65th birthday; in 2012 over 27% of those 65 – 74 were still working, compared to only 20.4% in 2002. The US Bureau of Labor Statistics estimates that in 2022 almost 32% of this group of seniors, and 10% of those 75+, will be in the labor force (Pew Research Center, 2014). Many of these seniors will continue to engage in air travel as an important facet of their work life, more so than any previous cohort of U.S. seniors.

Second, retired seniors report substantial interest in leisure traveling (Aegon, 2013). A study by the Transamerica Center of Retirement Studies (2013) found that 75% of retired people want to travel to spend time with family and 59% want to travel for excitement and the new experiences that travel can provide. An AARP study (2012) found that people 50+ travel more for leisure than any other age group and more in 2009 than in 2002; the study calculated that

people in their 50's take 10 leisure trips annually. ACRP Synthesis Report 51 (2014) cited a U.S. Travel Association study that found that those born before 1946 make an average of four trips a year for leisure and eight trips a year for business (p. 4).

Second, older Americans are generally wealthier and better educated than their counterparts only a few decades ago, both factors that contribute to a higher demand for travel. US Census data show, for example, that those 65+ have the highest net household wealth of any age group and were the only age group to see an increase in net wealth in the period from 2000 to 2011. In 2011 those 65+ had a net wealth of $170,516, more than double that of those 45 – 54 and 17% higher than those 55 – 65 (US Census, 2011). Seniors, as a result, have substantial disposable income and may be willing to spend more of it on air travel if those services meet their needs. The Tourism Unit of the European Community has developed a special senior tourism program as a way to increase economic development in EC member countries with struggling economies (Spain, Portugal, Greek, and the Balkans). This approach reflects EC findings that seniors from wealthier EC nations have greater purchasing power than those younger and most are willing to pay a higher price for quality services and goods, especially when traveling for leisure (Inova Management, 2012). A 2008 ACRP report estimated that the growth in senior air travelers through 2025 could create additional revenues as high as $3 billion for US airports and airlines.

Seniors, however, are also concerned about their physical ability, or that of their traveling companion(s), to make leisure trips. The Transamerica study (2013) found that roughly 68% of all respondents 60 – 69 were concerned whether they or their traveling companions were "in shape" to travel or if their physical health would interfere with their trips; among those above 70

almost 80% had the same worries. These socio-demographic trends led the authors of the AARP study (2012) to conclude,

> If leisure travel continues to increase for the oldest age groups, accessibility planning and implementation for air, rail, and bus terminals, stations, and vehicles will increasingly make a difference in their ability to travel and their comfort while doing so (p. 4).

Airports and airlines do, of course, have federal and in some case state obligations to address the accessibility needs of travelers *with handicaps*. Title II of the 1990 Americans with Disabilities Act prohibits any public entity at the local or state level from discriminating against those with disabilities, while Title III prevents discrimination against those with disabilities in any public accommodations, even if privately owned. The 1996 Air Carrier Access Act also prohibits commercial airlines from discriminating against passengers with disabilities, addressing a "hole" in the ADA protections provided to those with disabilities at airports. Taken together these two federal statutes require airports to make major structural and service changes or provide alternatives for people with disabilities; for example, airports must provide adapted toilets, elevators instead of stairs, level access, and automatic doors in the terminals, parking garages, and in all ground transportation.

The majority of older people, however, even those who experience problems in air travel, are not handicapped or disabled and so might not be protected by these laws (even if they were uniformly followed which a number of lawsuits against airlines and airports, such as in the Twin Cities, suggest they are not). The American Community Survey reported that in 2014 only 37.1% of those 65+ had a disability and that only 28.2% of people in the U.S. with a disability were over 65 (US Census, 2014b). In fact a smaller percent of seniors had a disability in 2014 than in the past and a smaller share of those with disabilities were seniors than in the past (US Census,

2014b; Herbel and Rosenbloom, 2005). In short most seniors are not disabled and most people with disabilities are not seniors.

SUMMARY OF LITERATURE REVIEW

We undertook four types of background analyses:

- a traditional literature review
- a series of five focus groups with seniors from diverse backgrounds
- a site visit to Dallas-Ft. Worth Airport organized by GM James Crites
- six short case studies of airports

We used the insights of our review of the literature to structure the focus groups with diverse seniors in Central Texas. Then we used the literature review, plus the insights we gleaned from the focus groups, to develop questions and pursue common themes on our site visit to DFW. Finally we used all the insights we gleaned from those tasks to undertake six short case studies of airports we were told had interesting services for seniors and/or had a higher than average number of senior travelers: Austin, Charlotte, Dallas-Ft. Worth, Las Vegas, San Antonio, and San Francisco.

Literature Review

Older people without disabilities have a wide variety of problems in air travel that are not addressed well or at all by services designed for people with disabilities. There is very little research that directly addresses the problem of older air travelers (although, as previously noted, ACRP currently has two projects underway on these issues). One of the few exceptions, ACRP

Synthesis Report 51 (2014), noted that older travelers might face a number of chronic diseases that can affect how easily they can transverse an airport. The ACRP report commented that,

> Older travelers tend to be less flexible than they were in their youth and can often be in denial about not having the same capabilities that they had formerly…many older travelers do have physical or mental limitations that, although not classifying them as disabled, may cause difficulties in navigating an airport terminal. (p. 4)

The general literature on older travelers provides useful information on issues that older air travelers might face. Research shows that seniors have a much greater need for detailed information about all stages of their trip prior to traveling (Waara & Stahl, 2001). Seniors have trouble navigating in new places; one study found that as many as 5% of auto trips taken by seniors may be "scouting" trips, traveling to a new destination a day or two before they actually need to be there or before their appointment, to familiarize themselves with the location, the parking, etc. (Rosenbloom, 2009). However, it is not possible to preview most links in the chain of air travel, even at the originating airport. Seniors also look for ways to guide their pedestrian travel; Nathan et al. (2012) found that older pedestrians in Australia used pedestrian amenities, such as seating, shade trees, and street lights, as landmarks, a way to make pedestrian paths more legible and manageable—amenities and landmarks generally missing in airports.

Older pedestrians also have trouble traveling long distances on foot especially if they lack sufficient places to sit or rest along the way. They don't necessarily need or want, however, to travel in a wheelchair (Rosenbloom & Herbel, 2009; Rosenbloom, 2009). Seniors often experience difficulties in carrying or lifting heavy objects (such as baggage), wayfinding and correctly interpreting signs in unfamiliar places (Waara et al, 2015) and maneuvering comfortably in crowds and crowded situations (Rosenbloom, 2009, 2005).

Seniors fear falling, with good reason; falls are the leading cause of death and disability among seniors (CDC, 2011). Figueroa et al (2014) found that older adults reported feeling unsafe in high density pedestrian environments; the seniors interviewed actively sought routes that were not crowded by pedestrians, bicyclists, and other sidewalk users, perceiving crowded spaces to be dangerous, increasing the likelihood of falls or crashes. In a study done at a medium-sized metropolitan airport in the Northeast United States between 2009 and 2010, Howland et al (2012) found that older travelers were significantly overrepresented among those who fell, "Since passenger survey data indicate that less than 10% of travelers were >65, these data suggest that age is a risk for airport falls." (p.134). Almost half of those falls were on escalators, and almost a third were slipping on terminal flours. Almost all the falls (96%) occurred in terminals or the covered walkways connecting terminals to each other or parking facilities. The authors attribute many of these falls, particularly on elevators, to the fact that more people are carrying heavier hand luggage now that airlines are charging for bags.

Older people are also more likely to experience fear of flying as well as "air-terminal stress." Low & Chan (2002) found that,

> Anxiety provoking situations include flight delays, customs and baggage reclaim, and airplane take-off and landing. The demands of preparing for the journey, the trip to the airport, and the paperwork are all added stresses to the older traveler. Air-terminal stress refers to the physical and mental stresses that the traveler encounters at the airport. Filling in forms at the airport, checking-in at the correct counter, getting to the correct departure gate…may be an ordeal for an older person…especially in a crowded, noisy environment (p.18).

ACRP Synthesis 51 (2014) suggests that fatigue may be a factor in increasing the likelihood of pedestrian crashes; fatigue may be caused by stress and anxiety as well as walking long distances.

A person we interviewed in one of our case sites, commented,

> There are people and machines, moving sidewalks, escalators, carts, people pushing supply carts, cleaning carts, people who sell stuff. People are not paying attention or on their cell phones. People are stopped in the middle of the hallway. There are slick floors, people running, and potential hazards in the airport even for people who are in good physical shape. Lots of noise, lots of physical distractions.

Seniors also often experience "destination anxiety," a fear that they do not know how to reach their destination or will not recognize the correct place to stop or turn; this fear can be debilitating (Noor et al, 2010). In addition, older travelers have different problems at different links in their travel chain (for example, walking from a bus stop to their home or walking from a parking lot to their final destinations) (Brentman et al, 2010). These findings highlight similar problems seniors are likely to have in airports.

Focus Groups

We conducted five focus groups with seniors from different socioeconomic backgrounds. We asked participants whether they walked in their neighborhoods and what made it easier to do so because we believed that problems seniors had in everyday life might translate in problems at the airport. We then segued to specific questions about air travel.

The first three groups took place in October 2015 at the Baca Senior Activity Center in Round Rock, Texas, a suburb north of Austin, which provides nutritional lunches for seniors at a

low cost. The last two focus groups were organized by the Capital City Village, an Austin-based nonprofit focused on helping seniors remain in their homes, in November 2015. We met with three groups of seniors at the Baca Center which offers social, recreational and educational programs for adults over 50. The seniors with whom we spoke were active, from line dancing to cycling; they were able to provide substantial feedback on their experiences as pedestrians in their community and in traveling through airports. Participants cited poor lighting and large parking lots as deterrents to walking in their neighborhoods while, scenic trails dedicated to recreational pedestrian use were used quite frequently by many of the seniors interviewed.

Many of the seniors interviewed at the BACA Center had recently visited airports. Most had been to Austin-Bergstrom International Airport (AUS), located approximately 25 minutes south of Round Rock. They identified problems in finding their way between Round Rock and AUS, as well as substantial traffic along the route, lack of parking at the airport, and confusion over how to get from parking lots to check-in. Many respondents found air travel to be quite stressful and even overwhelming. One woman claimed that she prefers to drive over flying and opts for long road trips to destinations like California and Florida. Road trips allow her and her sister to avoid many common issues with flying.

> "You have to go on that computer, and now you can't even take luggage and you're squeezed. Neither of us likes flying and we're retired and have nice vehicles, and we are intelligent enough to follow OnStar or GPS so we don't get lost."

Other respondents supported this view. Advances in technology that appeared complicated to the respondents, plus the problems in air travel, may have caused these older travelers to feel undue stress while flying.

We conducted two additional focus groups on November 16, 2015, with Capital City Village (CCV). CCV is an Austin-based nonprofit organization, whose primary aim is to help

seniors “age in place and community.” The group cited airport wayfinding as their primary concern, followed by complaints regarding long distances between security and the gate, the gate and baggage claim, and baggage claim and the exit. The respondents did not want to use wheelchairs to overcome these problems although those who had used chairs temporarily, due to an illness or surgery, or whose spouse had needed to use a wheelchair, mentioned how easy it had been to deal with problems at the airport. But they were almost guilty about having used a wheelchair and stopped doing so when they no longer had a temporary disability. It seemed as if accepting wheelchair assistance meant you were disabled, which had a negative connotation.

Many agreed they traveled for pleasure and going through the airport was a necessary, although not entirely enjoyable, part of the journey. Two respondents mentioned that they enjoyed shopping at the airport but admitted that the stress of getting to their gates sometimes dampened their enthusiasm for doing so. Several respondents said they would never drive and park at the airport because they found the parking confusing and the distances too long; one advantage of belonging to the Capital City Village was having other members to ask for rides. There was substantial and enthusiastic discussion of international airports which most of the respondents felt provided exemplary assistance to travelers, particularly seniors. One participant lauded the Singapore Changi Airport, saying there were always people available to help with bags and directions.

Visit to DFW Airport

We were invited to tour Terminal 4 at DFW by James Crites, General Manager; Terminal 4 is the newest terminal and the most accessible; it is the only terminal with moving sidewalks. We met first with staff members at the off-site management offices where they explained different aspects of airport operation, including the volunteer Ambassador program which may

have been the model for other such programs around the country. We also met with the marketing director who described the results of a study of spending patterns at the airport which found that seniors spend less than the average traveler at the airport. We were then bused to Terminal 4 and escorted through security, introduced to a volunteer "Ambassador" and shown new equipment designed to help board people with disabilities.

Terminal 4 is somewhat different from the other DFW terminals because most international flights land there. The airport pays for the wheelchair assistance in Terminal 4, rather than the airlines, because it is not practical for international carriers to contract for

wheelchair service for one flight a day. However, one international carrier often has a large number of travelers coming to Texas for advanced medical care; a number of wheelchairs and pushers are required for that flight.

American Airlines is the major carrier at DFW and provides some cart service in the other terminals, under contract to private providers. DFW officials told us that most services for travelers are the responsibility of the airline but pointed out that Terminal 4 did not need a cart system because of the moving sidewalks; however they also told us that they had taken out one moving sidewalk to accommodate more retail stores. Two airport personnel invented and built information kiosks for Terminal 4 because they could not find what they wanted and needed in the market; the kiosks are designed to be accessible to people in wheelchairs and provide detailed information about restaurants and shopping opportunities.

Case Studies

We called or talked in person with personnel responsibility for services for people with disabilities at six airports: Austin, Charlotte, Las Vegas, Phoenix, San Antonio, and San Francisco. We asked about the services they provided to those with disabilities, who delivered and who paid for them, how they addressed the needs of seniors without disabilities, and any plans they had to change their services. There were some common themes, although some interesting differences as well.

First, all airports told us that airlines were primarily responsible for addressing the needs of travelers with disabilities and those who needed special service; most websites directed travelers with concerns to the airlines. Most airport staff were confident that it was easy for travelers to get help at any link in the travel chain; we were often told “all they have to do is

ask." When we asked about specific problems, such as waiting in long lines at security or lifting baggage off conveyor belts, the standard answer was that the traveler need only ask an airline employee for assistance OR that only TSA could address long waits, etc. at security. We were assured that travelers at connecting airports would have no problems because their flight would always be met by an airline passenger representative and there would be multiple displays of the gates of connecting flights. Yet these were not the experience of our focus group participants nor of many students in the class. When we dug deeper, it appeared that some staff were merely reading from their own websites or had no personal knowledge of the situation; the coordinator at one airport was not even on-site but at office miles away at a municipal building. Airports have no legal responsibilities to seniors who face barriers but are not disabled; so they are not eager to accept any responsibility or admit that there might be serious problems.

In Austin, for example, American Airlines has ended curbside service (although the equipment remains, adding confusion). There simply is no one to ask for assistance or a wheelchair and no curbside phones or information kiosks; even if a traveler had called the airline in advance, it is hard to see American stationing either a wheelchair and pusher or some kind of service provider at curbside (or in the garage) waiting for the traveler. A person traveling alone would be challenged to find assistance without going deep into the terminal. Moreover, American has removed seating in the baggage retrieval area where an older traveler might need to sit while waiting for baggage. When visiting Charlotte in person, passenger service representatives there told one team member that travelers faced substantial problems because Charlotte is largely a connecting airport for most travelers. However, American Airlines, now the major carrier, does not print gate information for connecting flights (when US Airways did). The official position is that gates for connecting flights can change but that gate information is

always easily available; that did not seem to be true, unless you already knew where the information displays were. Staff on-site told us that giving gate information to lost travelers, often seniors, was one of their most time consuming tasks.

Second, although all airports told us that the airlines had primary responsibility, several themselves paid for additional services, often used by seniors even if not designed for them. Las Vegas, for example, has a staff of 100 Service Assistants who provide advice, guidance, etc.; although they are not wheelchairs pushers; they can however quickly summon assistance. The Las Vegas airport also contracts for part-time workers to staff information booths; these people are called Ambassadors (although most airport Ambassador programs are volunteer efforts). Charlotte runs a regular cart service through the airport; there are designated seated areas at frequent intervals in the airport, marked with handicap signs. If someone is sitting there, a passing cart will stop to pick them up. Until now, that service has been run by American Airlines' employees; starting in June the service will be contracted out. We were told that a number of travelers had fallen out of moving carts because the drivers were reckless. The Phoenix airport also provides some cart service connecting terminals, in addition to services paid for by the airlines.

Several airports told us that travelers who needed assistance could park in handicapped spaces, which were always near elevators. But seniors don't necessarily have handicapped placards and even if they did—it's not clear they could easily find these spaces. Only two of the airports had multiple phones, they said, in the garage to call for assistance. Some airports assured us that the airlines could arrange for people to be picked up by wheelchair in near-by, short-term parking lots and that more distant lots were served by accessible vans or shuttles. While the later seems likely, the former does not. So again it is hard to see how a traveler who needs assistance

in a parking garage could be certain s/he would easily arrange it or be sure of receiving assistance curb side.

Third, there are now a few national companies that provide both cart and wheelchair services and airports are finding it increasingly easier to contract for services. We spoke with the representative of a labor union who has been trying to unionize these workers; this person contended that most pushers are part-time, minimum wage workers who are required to offset their hourly rate with tips (as are wait staff at restaurants). These workers may not get proper training (how to handle different kinds of wheelchairs or people with different kinds of disabilities), and turn-over is so high that training can be relatively meaningless. Some airports did say that they were or had considered bringing the service back under the control of the airport but so far had not done so.

Fourth, some airports had implemented some of the improvements suggested by ACRP Synthesis 51, including some we recommend. San Francisco's airport has slow lanes at security in every terminal; these lanes are marked for families, seniors, and inexperienced travelers. However staff told us that TSA cutbacks meant that there were long lines at these lanes. So the slow lanes might address the crowding issue, and seniors' fear of being forced to move faster, but they can still entail lengthy standing waits.

Fifth, with only one exception (Las Vegas) in our small sample, it is extremely difficult for seniors to find useful information on what they will face and where they will need to go when they arrive at an airport. Most airport websites are fairly minimal, offering little information and telling travelers to call the airlines if they need assistance or TSA if they think they'll have problems in security. The airports with cart services don't advertise them on the website; websites rarely show where handicapped parking spaces or elevators are. Airports with

Ambassador programs don't advertise or inform travelers they exist; the San Antonio Airport told us that volunteers weren't reliable and it wasn't wise to let travelers know they could receive assistance if it couldn't be guaranteed. Charlotte doesn't advertise its cart service for fear that people who "don't really need it will start to use it." The Las Vegas airport website was the most useful of those we examined, but did not inform travelers of the presence of Service Assistants.

Insights

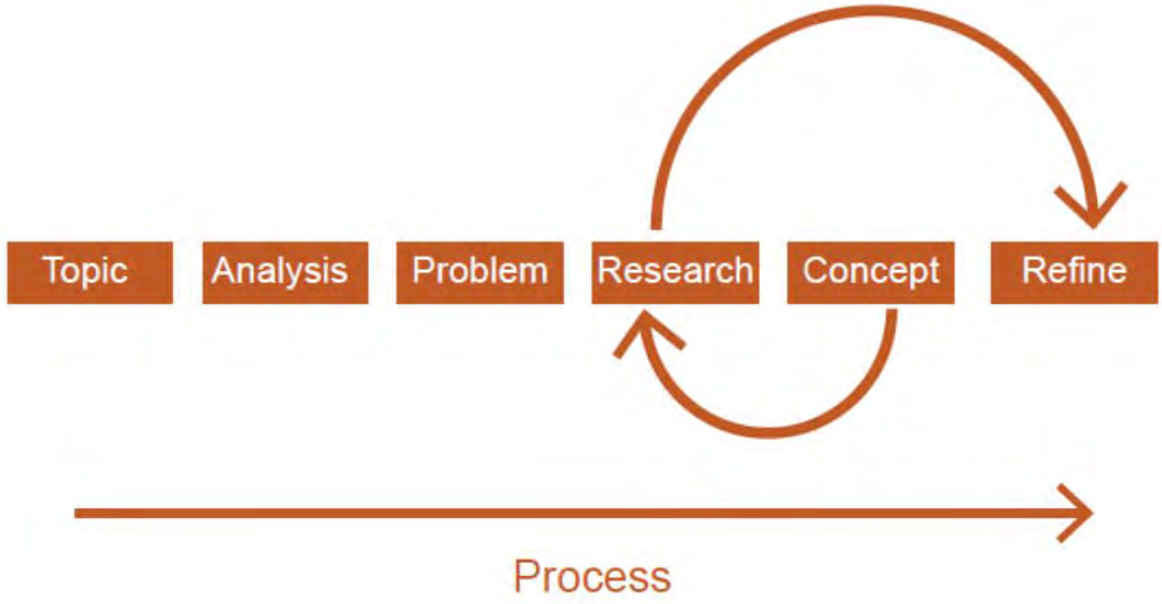
Overall, these four activities showed us that seniors face a variety of physical problems in traveling, accentuated by increased fear, stress, and anxiety. There is limited recognition of the problems facing senior travelers and no consistency among airports in the services offered. It is extremely difficult for seniors to plan ahead for the difficulties they might face in various links in the travel chain; it appears to be equally difficult to ask for assistance once a senior has arrived at the airport. Seniors have to rely on assurances that the airlines will address their needs.

But even if the airlines do respond, that response involves providing wheelchairs in the overwhelming majority of cases. It is easy to understand why airports don't want to assume more responsibility for senior travelers, but their current approach is not sustainable. If they provide only wheelchair service for the growing number of senior travelers, airports and airlines will face escalating costs—we can imagine airports blanketed with wheelchairs (and indeed some airports told us that they already face a shortage of wheelchairs at peak times). But adopting some of the suggested measures does have the potential to reduce the number of seniors who will need or ask for such assistance and may deliver a bonus to airport operators in additional spending by seniors at airport businesses.

TEAM PROBLEM SOLVING APPROACH

OUR DESIGN APPROACH

We used an interdisciplinary and qualitative lens in an iterative process to understand how researchers and various stakeholders viewed the needs of senior air travelers. As the figure below shows, we began by learning everything we could about senior travelers and airports; assessed what we had learned and refined our problem definition; undertook original research through focus groups with seniors, the DFW site visit, and our individual case studies; and developed framing concepts. We then conducted more intensive research on each of our concepts, possible solutions, and then refined them by evaluating the scope of problems each addressed and arrayed the possible costs against the potential benefits.



There is a risk that the results of a small number of focus groups and case studies are not scalable; the existing research base is also very thin. It is possible that what we found does not represent the universe of problems facing senior travelers, and airport management in responding—or even adequately defining the scope and depth of the problem. At the same time,

because we are not suggesting massive changes, it may be possible to experiment with some of our solutions as a beta test.

Our Findings and Recommendations

Our first step was to array the problems most reported in the literature, by focus group respondents, in our DFW site visit, and in our six case studies, against each trip link in the air travel chain. Our objective was to identify those problems that both cumulatively posed the most challenges for older travelers, and, might be met with a system-wide or air travel chain response. It is also important to focus on individual or unique problems in specific trip links, as does ACRP Synthesis 51—a chain is only as strong as its weakest link. But it is equally important to understand barriers and challenges that face older travelers on their entire journey through the airport—and see if there are systemic solutions. This may affect cost patterns as well; there are often economies of scale in the provision of services or facilities. The analysis also suggests a way for airports to rank needed improvements by priority; it makes the most sense to find a solution for the problems that most affect senior travelers.

In addition, our approach could lead to the standardization of amenities for all parties who many need special consideration, as ACRP Synthesis 51 suggests. An overwhelming problem facing older travelers is the inability to predict what they will find at connecting and arrival airports. Our work clearly shows that various airports provide different amenities and services—and the same airport may provide different amenities on different days!

Table 1 shows our analyses in tabular form; note that we chose not to assess wayfinding options other than information kiosks because of the major ACRP project on the topic shortly to be completed.

Table 1 – Problems Encountered in All Trip Links in Air Travel Chain

Links → / Problems ↓	Pre-Trip	Parking to Curbside	Curbside to Check-In	Check-In Through Security	Security to Gate	Gate to Gate	Gate to Baggage	Baggage to Local Transport/ Parking
Poor/limited Information	●	●	●	●	●	●	●	●
Wayfinding Problems	●	●	●	●	●	●	●	●
Assistance Not Available	●	●	●	●	●	●	●	●
Walking Long Distances		●	●	●	●	●	●	●
No seating; no recomposing area		●		●	●	●	●	●
Lines/Standing		●	●	●				●
Lifting/Handling Luggage		●	●	●			●	●
No bathrooms					●	●	●	
Poor Pedestrian Access		●	●					●
Technology Challenges	●		●				●	

It is obvious that three problems stand out because they affect every single link in the air travel chain:

- **lack of information** about every aspect of travel, including while seniors are making their plans
- **wayfinding problems**, an inability to understand where to go next, starting in a parking garage or curb-side drop off through to finding the baggage area and getting to local transportation on arrival
- **lack of assistance when needed**; the uncertainty of volunteer programs and limited wheelchair service at each link in the chain

Needing to walk long distances, having no seating to allow seniors to rearrange their clothing and repack their personal items after leaving security (*ie* recomposing areas), and having no seats along the long distances to their airport destinations are also important challenges for seniors. Handling baggage at several links in the air travel chain is a problem as is the lack of proper pedestrian facilities (which are arguably mandated by the Americans with Disabilities Act).

The next step is our analysis was to identify solutions discussed by our respondents or described in ACRP Synthesis 51, or that seemed to us too plausible. Our primary goal was to develop innovative solutions that addressed multiple challenges facing older, and other travelers, rather than one-off approaches that would contribute to a fragmented response to the needs of the senior air traveler. Later we also assessed these solutions against their costs, in a cost-effectiveness analysis; those assessments are in a subsequent section.

Table 2 summarizes our assessment of the most promising and innovative options we considered. The dots represent our evaluation of how well these improvements a) would address

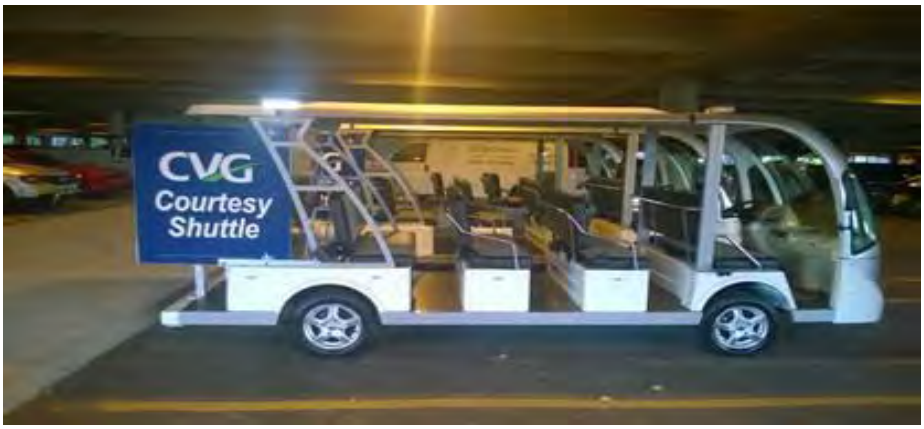
Table 2 - Innovative Designs to Address Key Airport Problems

Strategies → / Problems ↓	Accessible Cart System Both Land- and Airside	Offer and Advertise Additional Assistance	Provide Additional Seating and Recomposing Areas	Provide Integrated Information Kiosks in Airport
Poor/limited Information	● ●	● ●	●	● ● ●
Wayfinding Problems	● ● ●	● ●	●	● ● ●
Assistance Not Available	● ● ●	● ● ●	●	●
Walking Long Distances	● ● ●	●	● ●	
No seating; no recomposing area	● ●		● ● ●	
Lines/Standing	●		●	
Lifting/Handling Luggage	●	●	●	
No bathrooms		●		●
Poor Pedestrian Access	●			
Technology Challenges	●	● ●		●

each of the problems we identified as facing older air travelers, and b) would address the most important problems. Three dots at the intersection of a problem and an innovative option indicate that the option may make major inroads into addressing the identified problem. Two dots indicates a strong impact on addressing the problem or addressing an important problem; one dot indicates a positive impact but of lower impact. Of course these are qualitative assessments and can be disputed but they represent an educated evaluation of the potential of each approach by our student team who worked a whole semester on these issues.

Overall we feel the single most impactful improvement would be to operate a cart *system* both land- and airside with a coordinated interchange—most likely dropping passengers off at either check-in or the entrance to security. Seniors could start in the parking garage or curbside; those who did not need wheelchairs to move through security could be assured of a cart as they exited security. Charlotte offers a model although the carts are only available airside; there are marked and signed benches along the various concourses so that older travelers can decide that they've walked far enough and sit down and wait for a cart in designated areas.

The drivers could provide a certain amount of information and wayfinding advice and show travelers the location of bathrooms; moreover if being driven, seniors might not need as

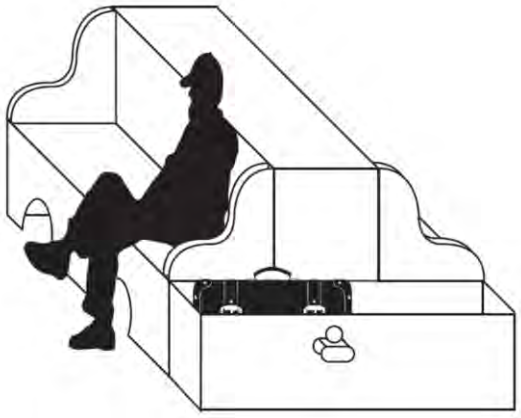


Northern Kentucky International Airport
Source: Stuckattheairport.com

much information or help finding their destinations. The cart above operates from the parking structure to curb-side in Northern Kentucky International Airpot but similar vehicles could operate within the terminal.

There are problems that must be addressed; these vehicles do not provide much protection in a crash and people can fall off or stumble getting on or off. The vehicle above is not marked as providing service for seniors and those with disabilities; some airports fear that travelers who have no problems but simply want a ride will fill the available capacity (since under the ADA you cannot ask an apparently able-bodied traveler to explain their disability). However, this can be diminished considerably by marking the van appropriately.

The side seating in the design below also has advantages; it can be pulled by a trailer and has space in which it would be easy to put luggage. Moreover it would be faster for travelers to board and deboard. However it may also be easier for passengers to fall off; if seat belts were required the service could become very slow and frustrate travelers.



Cart Trailer for System
Source: Nolan Stone (original design)

We believe that the second most important innovation is to simply provide more staff to offer assistance, call for wheelchairs or a cart service, provide wayfinding information, and direct travelers to bathrooms (or shops or restaurants). Las Vegas appears to provide a useful model; there are both full-time and part-time paid staff who provide a range of services; they address the wayfinding and information problems of many travelers, can guide them to bathrooms, and overall reduce the stress and anxiety of traveling for older people and indeed all travelers. The picture below is a United Airlines agent who has been given an iPhone so that she can provide a range of services and assistance to travelers. Neither the United representatives nor those at the Las Vegas airport help with baggage or push wheelchairs but they can provide a variety of wayfinding and other information—and more importantly summon the kind of help a traveler needs. They provide a great deal of security for anxious and stressed seniors.

United Is Giving 6,000 Airport Employees iPhones to Improve Customer Service

The third most important innovation is to provide substantially more seating at every link in the air travel chain as well as ensuring sufficient "recomposing" seating after security. Older travelers like walking when it is made easier for them; one way to do so is to ensure that they have many places to stop as they make the way to their gate on departure or to baggage and

beyond on arrival. Two airports that serve as models are Charlotte and Savannah (which have very similar new terminals). Both airports provide seating throughout those terminals in an attractive setting. They locate the seating away from the heaviest flow of traffic and offer rocking chairs and some live greenery to sooth anxious travelers.

The fourth most important option is to provide an integrated system of interactive information kiosks that provide travelers with a wide range of information but also allow them to talk with a staff person if they can't manage the technology. In fact, the better and more comprehensive the information provided, and the more widely distributed these kiosks are, the more important this option becomes. If, for example, there were such units in parking garages and at curbside, as well as within the airport, and if these units provided interactive maps, updated gate and departure information as well as the location of check-in, the delays at various security lines, the location of toilets as well as shopping, etc, they would address a number of challenges that face older travelers along the air travel chain.

The student generated designs below show what such a unit might look like in a garage and at curbside. Note that these kiosks could be used to call for a wheelchair or a cart or baggage

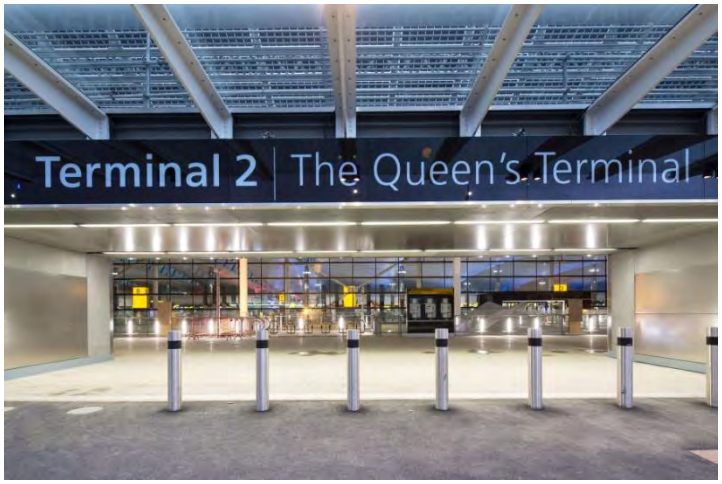
Parking Garage Kiosk
Source: Designed by Saul Vasquez
Source: Skift.com

Curbside Drop-off Kiosk
Source: Designed by Saul Vasquez

assistance and other services, addressing a number of concerns of older travelers. We also felt that there were other options that might address the problems faced by older travelers in more limited parts of the air travel chain but that were worth exploring:

- Improve all pedestrian access into and through the terminal
- provide better information in parking garages
- address problems in handling baggage

The picture below shows how a terminal at Heathrow airport has made terminal access substantially easier for all travelers; seniors would find such access to reduce stress and make dealing with luggage a little less stressful. Other pedestrian improvements could include installing raised and marked pedestrian crossings, as the Austin airport has done, provide wider sidewalks at terminal entrances and exits, remove unnecessary obstructions along all pedestrian



Heathrow Airport
Source: Your.Heathrow.com

sidewalks at terminal entrances and exits, remove unnecessary obstructions along all pedestrian access routes, and provide sheltered seating and rest areas for seniors and others who might need the respite.

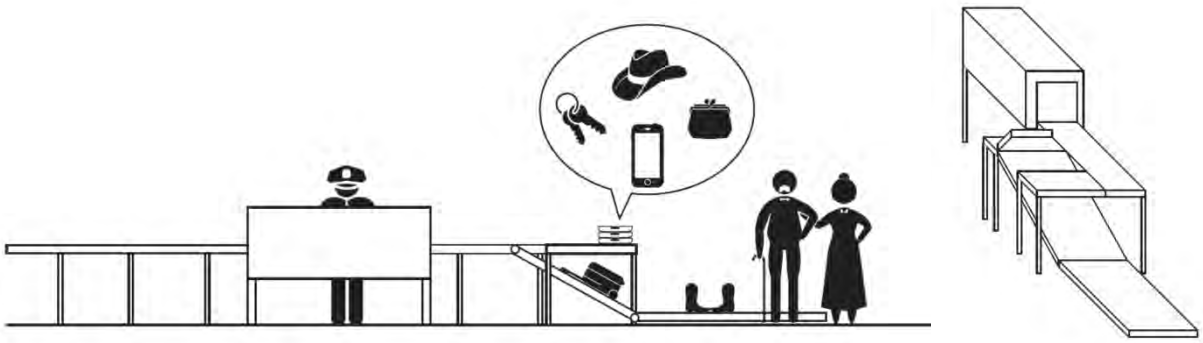
Smart Garage
Source: The New York Times

Airports often tell seniors with handicap placards to park in specially marked spots that are designed to be close to terminal access points. But a traveler not very familiar with the structure may well have difficulty doing so—and many older travelers do not have such placards. Airports could do two things; set aside close-in parking for seniors who are not disabled (as do many grocery stores and shopping malls)—and using new Smart Garage technology, as shown above, indicate the number and location of these designated spots. This would significantly reduce cruising for parking spaces (a major goal of the SmartGarage technology) as well as wayfinding errors in garages and long walks by senior drivers.

Finally handling heavy baggage can be a serious problem for older travelers. New bagwells flush with the floor reduce the strain on all travelers; the bagwell is the area where a traveler places his or her bag when checking in. Another place where seniors are confronted with luggage issues is at security where they must put their hand luggage on a conveyor at table height (airline restrictions have led to every heavier hand luggage). It might be useful for TSA to

evaluate if the bags must be elevated to be screened; until they make those changes, we suggest that there is already a technology that might relieve the strain on elderly travelers.

Security Scanner Conveyor Design
Source: Nolan Stone (original design)



We have chosen these options from dozens of suggestions and actual operating experiences at airports in the US and abroad. Our analyses suggest that these options have the greatest potential to improve major trip links in the air travel chain for older travelers and perhaps all travelers. None of this is actually new, but the packing is; moreover not a lot of these ideas have been evaluated for their scalability.

POLICY RECOMMENDATIONS

We also wish to suggest a series of policy and program options that airport management should explicitly take on-board:

- Strategically address the needs of seniors in all links in the air travel chain
- Ensure all capital improvement plans and budgets address these issues
- Work with the private sector and airport vendors to secure funding for installation, maintenance, and update of information kiosks
- Work with the private sector (eg Google) to develop one airport app which provides ALL needed information
- Ensure the airport website makes clear all services offered to seniors at the airport

- Evaluate services to seniors and those with disabilities on a route and regular basis; consider offering free wi-fi to travelers who agree to fill out a survey
- Develop strategies to address weaknesses and gaps in service to seniors

SAFETY RISK ASSESSMENT

The Federal Aviation Administration (FAA) implements the Safety Management System (SMS), which is "a formalized and proactive approach to system safety" (FAA, 2014, p. 1). According to the manual, "the Air Traffic Organization (ATO) SMS is an integrated collection of principles, policies, processes, procedures, and programs used to identify, analyze, assess, manage, and monitor safety risk in the provision of air traffic management and communication, navigation, and surveillance services" (FAA, 2014, p. 1). The SMS manual "informs ATO employees and contractors about the goal of the ATO SMS, describes the interrelationship among the four components of the SMS, and instructs readers on the process of identifying safety hazards and mitigating risk in the National Airspace System (NAS)" (FAA, 2014, p. 1). The four components of the SMS are: Safety Policy, Safety Risk Management (SRM), Safety Assurance, and Safety Promotion.

Our focus on older passengers does not directly fall within the stated purview of the SMS, which is to "support the ATO in objectively examining the safety" of the "safest, most efficient air traffic system in the world" (FAA, 2014, *Foreward*). However, portions of the SMS can be adapted to support and enhance our recommendations. One benefit of utilizing the SMS to guide implementation of our proposal is that airport personnel should already be familiar with the systems.

The most significant safety issue is that older passengers are more at risk of falls at various points in the airports than younger travelers; they are particularly at risk on escalators. Howland et al (2012) caution,

> First…this number [of falls] is apt to increase due to population aging and the number of older adults who are retired and have the means to travel. Second, elevators were by far the most common location for falls at the airport we studied. Third, older adults are at greatest risk for airport falls in general and escalators in particular (135).

There are precursor events for each of these accidents (FAA, 2014, p. A-5). It is important that airport personnel redevelop existing "accident prevention programs" that "focus on the collection, analysis, and investigation of incident data" (FAA, 2014, p. A-5) in order to understand where seniors are most at risk. Having that data allows the airport to institute changes which can help to prevent, or even eliminate, future accidents.

The Safety Order of Precedence has four categories of safety risk mitigations (FAA, 2014, p. 13). The Safety Order of Precedence safety risk mitigations, in order of occurrence, are as follows:

1. Design for minimum risk;
2. Incorporating safety devices;
3. Providing warning; and,
4. Developing procedures and associated training.

In order to prevent the increased risk of accidents in the aging community, our proposal focuses on the first and fourth categories.

The Safety Risk Management (SRM) phases can be incorporated to guide the implementation of our proposal in order to support the accident prevention program through

designing for minimum risk and developing the procedures and associated training. According to the SMS, the five Safety Analysis Phases of the SRM "apply to all SRM activity, whether the activity pertains to ATO operations, maintenance, procedures, or equipment development" (p.19). If the SRM is acceptable for the implementation of ATO operations, they should satisfy the requirements of implementing non-security related landside operations.

The five phases are: (1) describe the system, (2) identify hazards, (3) analyze risk, (4) assess risk, and (5) treat risk; also abbreviated as DIAAT (FAA, 2014, p. 19) (Figure #3.2: DIAAT Process).

Describe the system	• Define scope and objectives. • Define stakeholders. • Identify criteria and plan for SRM efforts (including modeling and simulations). • Define system or change (use, environment, intended function, future configuration, etc).
Identify hazards	• Identify hazards. • Use a structured approach. • Be comprehensive and do not dismiss hazards prematurely. • Employ lessons learned and experience supplemented by checklists.
Analyze risk	• Identify existing controls. • Determine risk based upon the severity and likelihood of the outcome.
Assess risk	• Assign risk level for each hazard based on severity and likelihood.
Treat risk	• Identify mitigation strategies. • Develop safety performance targets. • Develop monitoring plan.

Figure #3.2. DIAAT Process

The FAA SMS is adaptable to developing proposals to improve the landside operations of the airport. By focusing on a safety risk manual that aims to mitigate the risks associated with aging travelers, airports can create a friendlier and safer passenger experience for seniors and all travelers. The Safety Order of Precedence categories and the SRM DIAAT system can guide the development of our suggested improvements at airports.

INTERACTIONS WITH AIRPORT OPERATORS AND INDUSTRY EXPERTS

We learned a great deal from these generous people; we couldn't be more grateful for their time and wisdom. We have already summarized what we learned in the body of the text above.

DALLAS/FORT WORTH INTERNATIONAL AIRPORT

Lisa Hughes, Planning Manager

Diana Bravo, Market Research Analyst

Kristen Meloy, Terminal Relations Manager

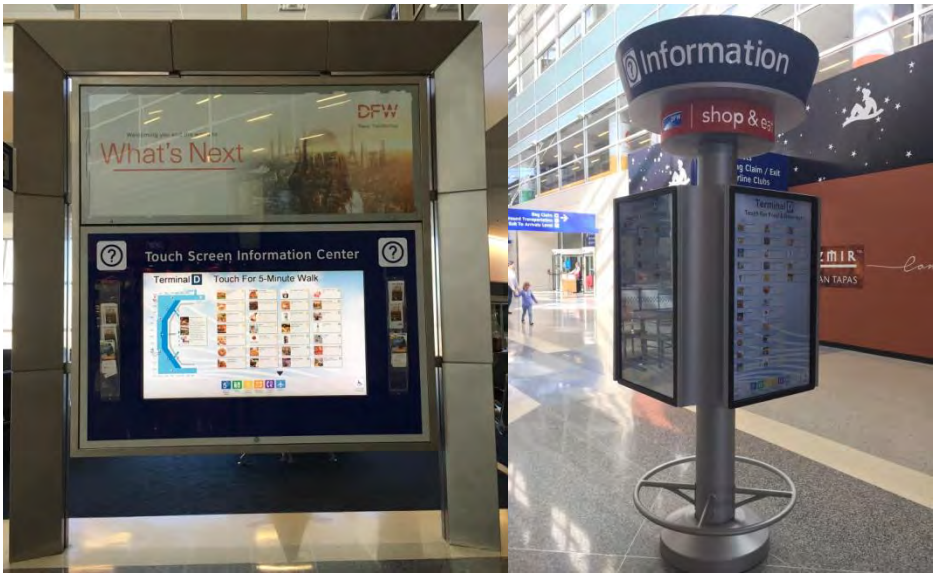
Jeff Coward, Program Manager Ambassador Volunteers

Jason Williams, Senior Airport Planner

Brant Mullen, Senior Airport Planner

John Han, Consumer Insights Research Manager

Diana Bravo, Market Research Analyst



Information Kiosks at DFW

AUSTIN BERGSTROM INTERNATIONAL AIRPORT (AUS)

Janice White, Project Management Supervisor

CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT (CLT)

Diana May, Director, Volunteer Program
Two support staff who asked not to be named

(PHOENIX) SKY HARBOR INTERNATIONAL AIRPORT (PHX)

Mary Beth Thompson, ADA Coordinator

SAN ANTONIO INTERNATIONAL AIRPORT

Christina Foley, Special Activity Coordinator

SAN FRANCISCO INTERNATIONAL AIRPORT (SFO)

Stephanie Francisco, Guest Services

WORKERS DEFENSE PROJECT

Rose Levy, Lead Organizer, Austin

PROJECTED IMPACTS

MEETING ACRP GOALS

ACRP has six goals for this competition and we believe we have met each one:

1- The project has raised awareness of both the ACRP program and the importance of airports—not only to the students in our class but to our fellow planning students and the architects and designers we share the School with. We presented our findings this week to an all-School seminar.

2- While we don't have a lot of elevation on how much airport issues are considered in academia, we are the first city planning course to ever address the issue. And we will

honestly never look at airports as mysterious block boxes again. It was genuinely exciting to learn about something so totally new to us, but also very important.

3- We were excited to be engaged in conceptualizing comprehensive solutions that touched on almost every aspect of terminal operations, baggage handling, and customer service—as ACRP sought.

4- We believe that we have engaged in what Ernest Boyer calls the scholarship of synthesis, bringing together existing materials in a new and innovative way (or at least a way that has only recently been considered). We think we are making a contribution and are excited about that.

5- We learned a great deal more by being asked to consider carefully what we were doing—as required by the competition rules. Usually we only have to please the professor; knowing that real experts in the field might actually read our work was both exciting and daunting—and really different than most of our courses. It made the whole effort very real.

6- We were excited to learn that city planners sometimes do end up working for and planning airports—although a little depressed to be told by industry folks that it was the exception and not the rule (that usually you had to have a military background). Our professor says that some of her students have ended up in airport management, but we were disappointed to learn that maybe this wouldn't be a career option when we got so excited by the potential opportunities (it is like planning a city!)

FINANCIAL ANALYSIS

Our innovative ideas are largely at the conceptual stage. First, we do know that our suggestions and policy recommendations will create different cost parameters for different

airports, depending on the age and condition of their existing terminals, their capital improvement plans and budgets, the policies and goals of their governmental sponsors, and the ways in which they are currently addressing these issues. At the same time, if more airports start to adopt the same procedures and technologies it is likely that costs will drop as the market becomes large enough for bigger firms with lower cost structures to enter; moreover that may lead to more competition, at least for certain facilities or services, which will ultimately lower prices.

Second, there is no doubt that the aging air traveler pool is growing; airports will have to address the challenges presented by growth in this market segment, whether they want to or not. The current method used by most airports, forcing older people into wheelchairs or letting them fend for themselves in an increasingly stressful and even dangerous environment, is not sustainable (let alone humane). In fact, depending so much on a labor intensive solution, even if the workers are part-time and low paid, will ultimately be orders of magnitude more expensive than many of our options—as the mass transit industry has clearly established. We do suggest some labor intensive solutions in the short run, but the costs are not comparable—sending someone for one person in a wheelchair is many times more costly than paying a driver to operate carts on a route or even sending that driver in a cart to pick up *multiple* people. Having service agents or assistants who can provide information and service to dozens of people an hour will always be less expensive—and generally more appropriate for most people's needs—than sending a pusher to help someone who doesn't actually need a chair but requires better information and a place to sit down as they traverse the airport. We also believe that a truly comprehensive and interactive information kiosk, widely located throughout the airport will address the needs of seniors enough that they some will forgo more expensive services.

Third, instead of ignoring seniors, our solutions give airports an opportunity to increase their revenues—seniors have some of the highest disposable incomes in the country. It is not accident that the EC is basing a major economic development strategy on encouraging wealthy seniors from the richer EC countries to visit some of the poorer EC countries. But fairly wealthy air travelers in our focus groups told us they were too nervous or stressed to eat or shop in airports, even though they often thought they would.

Fourth, it is very likely that many of our more labor intensive solutions, like providing service assistants, will disappear over time as apps and on-line communication becomes so much better for airport travelers—and those travelers are more used to those technologies. It won't be long before no one will have paper anything and all the information you need to know about every airport is available on your belt or in your purse. So some of these expenses are temporary.

The bottom line is that our solutions have the very real potential to be both more cost-effective than the disjointed and reactive ways in which many airports address the needs of older travelers AND make travel, and spending in airports, substantially more attractive to senior air travelers.

APPENDIX A
CONTACT INFORMATION

Faculty Advisor

Dr. Sandra Rosenbloom, Professor
Community and Regional Planning
The University of Texas at Austin
SRosenbloom@utexas.edu

Students

Andrew Asgarali-Hoffman
BS Economics
BS Finance and Multinational Business Operations
MS Community and Regional Planning (Candidate)
Graduate Student
asgaralihoffman@utexas.edu

Caroline Bailey
BA Environmental Studies
MS Community and Regional Planning (Candidate)
Graduate Student
carolinembailey@utexas.edu

Ryan Berrier
BA Interdisciplinary Studies
MS Community and Regional Planning (Candidate)
Graduate Student
ryan.berrier@utexas.edu

Amy Combs
BA Women's Studies
MS Community and Regional Planning (Candidate)
Graduate Student
combs.a@utexas.edu

Appendix A, continued

Samuel Day-Woodruff
BA History
MS Community and Regional Planning (Candidate)
Graduate Student
samdaywoodruff@gmail.com

Rebecca Fleischer
BA International Relations and Communications
MS Community and Regional Planning (Candidate)
Graduate Student
rebecca.fleischer@utexas.edu

Coleen Gentles
BS Biological Sciences
MS Community and Regional Planning (Candidate)
Graduate Student
cegentles@utexas.edu

Anna Lake-Smith
BA Architecture
MS Community and Regional Planning (Candidate)
Graduate Student
ajlakesmith@utexas.edu

Allison M. Long
BS Sociology
MS Community and Regional Planning (Candidate)
Graduate Student
amlong1@utexas.edu

Appendix A, continued

Maggie Moore
BA Urban Planning and Public Affairs
MS Community and Regional Planning (Candidate)
Graduate Student
maggiemoore@utexas.edu

Karen Peris
BA Political Science
MS Community and Regional Planning (Candidate)
Graduate Student
keperis@utexas.edu

Nolan Stone
BS Landscape Architecture
MS Urban Design (Candidate)
Graduate Student
stonenolan7@gmail.com

Saul Vazquez-Mejia
BS Architecture
MS Community and Regional Planning (Candidate)
Graduate Student
svazquezmejia@utexas.edu

Tahnee Yoon
BA Journalism and Media Studies
MS Community and Regional Planning (Candidate)
Graduate Student
tahnee.yoon@utexas.edu

APPENDIX B
THE UNIVERSITY OF TEXAS AT AUSTIN

The University of Texas at Austin, a tier I major research university, is the flagship school of the University of Texas System, which includes nine academic universities and six health institutions state-wide. The University of Texas at Austin is ranked among the biggest and best research universities in the country. The University is working to change the world through ground-breaking research and cutting-edge teaching and learning experiences. Its primary goal is to transform lives for a better society; teaching and learning are integral to that goal. The University seeks to achieve excellence in all of the interrelated areas of education, research, and public service.

In 2014-15 the University had $586,778,429 in sponsored research projects, which helped support thousands of graduate student researchers. The University provides an exceptional return on the investment that the state has made; the University drives economic and social progress in the state, while serving the city, state, and nation as a leading center of knowledge and creativity.

Founded in 1883, the University is currently home to more than 51,000 students from 126 countries and 3,000 teaching faculty. The campus extends over 431 acres, has 17 libraries, and 18 colleges or schools which offer 119 undergraduate degrees and 223 graduate degrees. The University has had 112 Fulbright Scholars, 31 Rhodes Scholars, and 23 Marshall Scholars. At the heart of the Austin community, the University of Texas is a site where creative minds live side by side with the leading innovators in scientific, technological, and cultural fields.

UT Austin has the number 1 rated accounting, Latin American history, and petroleum engineering graduate program in the country—plus more than 15 undergraduate programs and more than 40 graduate programs rated in the top 10 nationally.

The UT Austin School of Architecture is rated among the top five in the nation; its goal is to combine intellectual curiosity with professional prowess to create a more sustainable world. Within the School of Architecture, the Graduate Program in Community and Regional Planning, in which the students who prepared this design entry are being educated, is among the top ten planning programs in the nation. Over its 50 year history it has educated thousands of students who have gone on to change neighborhoods, communities, cities, regions, and the nation. The program currently has 100 graduate students for a 9 to 1 student faculty ratio.

The CRP Program carries out exciting research and meaningful project work locally and internationally. The Program is committed to building a professional planning community that resembles the communities in which our graduates work.

APPENDIX C – INDUSTRY PARTNERS

We had substantial input from industry people but we did not have a formal partnership with any.

Appendix E: Evaluation of Educational Experience Provided by the Project

STUDENTS

The students evaluated their experience in two ways; they responded individually in writing to the five questions listed below (from the competition website) and held a student-led discussion just before submitting this entry.

1) **Did the Airport Cooperative Research Program (ACRP) University Design Competition for Addressing Airport Needs provide a meaningful learning experience? Why or why not?**

   The ACRP University Design Competition for Addressing Airports Needs did provide a meaningful learning experience for us. The competition allowed us to explore topics in transportation, aging populations, and airport design. These three subjects are not widely addressed as a collective group, and our research provided insight into a specialized topic that will only continue to increase in relevancy over time.

   The competition also gave us the opportunity to examine the airport as a community microcosm. We found the airport functions much like a city, and just like a city has issues that need to be resolved. While the airport is an obvious place for planners to focus, many of our classes instead focus on cities, communities, or regions. This competition allowed us to incorporate what we know about intergenerational design in cities and fuse it with our experiences in airports. We learned a great deal about addressing the needs of an aging population, especially in terms of flying. We also learned how to synthesize and

hone our qualitative research and literary review skills in order to become more experienced practitioners.

It is always important to think about a different perspective other than your own and how other people may view what seem to be easily navigable situations. As able-bodied students who have spent a fair amount of time in airports, we become inured to the things that can make travel challenging. In conducting research for this project, we came to understand the nuances of those challenges and how they negatively affect seniors' travel experiences.

Lastly, for one student it was a personal journey as his father is a commercial airline pilot. This particular student was able to gain a much broader understanding of airports from a pilot's perspective.

2) **What challenges did you or your team encounter in undertaking the competition? How did you overcome them?**

The greatest challenge our team faced was the general lack of knowledge on older populations and airports. Most of our literature came from studies on older populations in everyday life, but we were able to apply some of the findings from those studies and make reasonable assumptions about older people's experiences in airports, and how we might be able to plan and design airports to meet the needs of the incoming "silver tsunami."

The second challenge was our lack of knowledge of planning for airports, how airports are managed, or what kinds of services airports typically provide for seniors. In order to overcome this knowledge gap, we utilized the ties between airports and other topics, such as senior mobility and habits in urban environments. We were also able to have in person conversations with industry staff from two different airports, which was extremely valuable. One of the more interesting people that we spoke to was the Lead Organizer at the Workers Defense Project in Austin. She gave us very insightful information on employees' experiences at airports and how they might affect the services being offered to senior populations. We were also able to reach out to multiple focus groups to talk to them about their experiences with flying and how they felt about traveling through airports, and thus acquire a small sample of original data.

The third challenge was finding a creative solution for aging populations traveling through airports. Airports, for the most part, are highly sophisticated entities, so developing creative solutions was difficult. After researching background information on airport staffing, it was challenging to try and propose programs and initiatives on a system largely based on outsourced services. In wanting to introduce new amenities, we had to keep in mind the capabilities of airline and airport participation, both of whom have different operating input. As we worked together, it became clear that our strength was a strong understanding of the problem(s), and the result is an in-depth proposal that focuses on robust research and strong analysis.

3) **Describe the process that you or your team used for developing your hypothesis.**

We first explored an in-depth literature review using peer-reviewed journal articles on transportation and aging communities. One article we frequently referenced included a study about falls and accidents at an unnamed airport somewhere in the Midwestern United States. Next we researched various airports around the United States to see what they might be doing in terms of accommodating aging passengers or even those with disabilities. We searched for case studies where airports were employing unique techniques in accommodating aging passengers. We analyzed each link through the airport from arrival to departure, including drop off, check in, security, finding the gate, transferring, etc., to find potential obstacles for older passengers along their journey. Once we identified several potential obstacles for each link of the journey, we brainstormed various solutions to each problem in a workshop setting, selected the solutions we felt would be the most successful or cost efficient to implement, and proposed policy recommendations as a long-term solution.

To accompany our research, we interviewed focus groups to grasp a better understanding of the needs of aging travelers as well as took a site visit of Dallas-Ft. Worth International Airport to observe techniques currently in place. We also interviewed members of industry and advocacy.

4) **Was participation by industry in the project appropriate, meaningful, and useful? Why or why not?**

Some industry participation was extremely useful in giving us an insight to some of the inner workings and nuances of the airport. We met with representatives from Austin and

Dallas' airport planning departments, as well as a local union representative who offered very useful information that was incorporated within our report. We were able to find out from primary sources that the care of elderly, but not disabled, passengers is a back and forth game between airports, airlines, and third party contractors. If we had not been in contact with industry professionals, it is doubtful we would have been able to acquire this nuanced look into the day-to-day operations at airports.

While participation by professionals in the industry was tantamount to our proposal, some people within the industry were less knowledgeable of aging populations traveling through their airport and would just reiterate information found on their airport's website. The fact that there is a division of responsibilities between airports and airlines also leads to miscommunication, and the participation by industry enlightened us to the relative lack of attention being paid towards older travelers.

At the end, we all felt that we wanted more information! The more information we uncovered, the more questions we had.

5) **What did you learn? Did this project help you with skills and knowledge you need to be successful for entry in the workforce or to pursue further study? Why or why not?**

Understanding the different needs of older generations is important to be aware of when planning for urban areas. We are not prepared for the forthcoming shift in the age of our population. It is not in the best interest of policy makers and planners to wait for baby

boomers to reach 65 years of age before we begin planning for the effects a large number of elderly persons will have upon society. In the near future, planning for the mobility and well-being of the elderly will mean planning for a potentially vulnerable age group which comprises a sizeable percentage of the population.

We learned about the functioning of airports, along with standard transportation terminologies. We learned a great deal about the way airports operate and the boundaries between airlines and airports that can lead to difficulties coordinating design, development, and implementation. We also learned a lot about planning in neighborhoods for the elderly.

We learned how to conduct focus groups, which many of us have never done before, and research and write a proposal for a design competition. Many of us are planners without a background in design, so learning the design process was fun and useful to us. We learned the process for participating in a design competition from beginning to end, and what it was like to share the process with a group of other students.

We also learned how to problem solve in a "real world" scenario. Learning how airports operate and the policies behind them is directly applicable to any large-scale systematic issue. Thinking about an airport as a microcosm of a neighborhood actually made the issues seem more palatable, and it provided a solid case study for us to draw upon as we move into the world of planning.

This project helped us realize how important it is to analyze all sides of an issue. It is also very important to be thorough and detailed. This project helped with improving skills that will be useful in the workplace and beyond.

FACULTY

1) **Describe the value of the educational experience for your students participating in this competition submission.**

The interdisciplinary graduate course in Community and Regional Planning that prepared this submission was titled *Creating Intergenerational Communities*; my goal was to show students the challenges and opportunities that an aging society presented and the need for multi-disciplinary approaches to problem solving. I didn't originally intend to focus on airports, because frankly I knew little about how they work (although a handful of students over the years have ended up in airport planning). When I saw the Design Competition announcement in August, 2015 I realized that an airport, air- and landside, is a microcosm of a community and would provide students with an array of real world planning and design challenges whose lessons would carry over to more "traditional" neighborhood and community planning challenges.

I believe my goals were more than met. Students were from varied professional and educational backgrounds and had a wonderful opportunity to learn from one another's skills, experiences, and perspectives on addressing real world problems with multiple social, psychological, sociological, medical, technical, financial, design, construction,

administrative, and operational facets. They had to learn to delve deeply into individual areas of airport access and operations while keeping the big picture in mind. They went far beyond my expectations because the topic was new to the professor as well as the students! But the reality of the issues and the challenges they could see and hear that seniors faced, as well as the real issues airport managers had to address, engaged and challenged them. I believe they learned to work well in interdisciplinary teams, to take responsibility for identifying and synthesizing not-easy to find data and information, and to develop innovative and interesting design and operational ideas.

2) **Was the learning experience appropriate to the course level or context in which the competition was undertaken?**

It was a graduate class, but there was some variation in the experience, training, and skill level of the students. Some students had returned to school for a masters degree after having worked professionally for a number of years. Other students had just received their BA/BS degree three months earlier. Some were social scientists, others architects or landscape architects, or K-12 educators or public administrators. A few were international students.

We teach many project courses where interdisciplinary teamwork is vital but some of the younger students hadn't had that experience in their undergraduate education. So the uncertainty of doing a project where there was no textbook or even one right answer to most questions was difficult for some. But ultimately I think they learned how to address

problematic situations and work well with people from diverse disciplines and backgrounds to develop real, practical, and meaningful options for addressing the needs of the growing cohort of older travelers.

3) **What challenges did the students face and overcome?**

First, there is so little written about the issues which the students addressed; they had to comb dozens of ACRP reports, for example, to find a tidbit here or there addressing the needs of senior air travelers. They ultimately realized that they would need to use and build on a more general literature on the travel needs of seniors—they couldn't just find answers in a book or report.

Second, and ironically, we learned of a new ACRP project addressing some of the very themes we were struggling with, just as we concluded the semester; I had to convince the students that the more minds addressing a serious and growing problem, the more likely it was that we would find or develop useful solutions to those problems. So while there is now a $350,000 ACRP project addressing mobility needs of air travelers, their work would not be in vain. Third, many of the students had never organized or led focus groups; some of the designers found that more difficult than did the social scientists. But they knew they needed the insights of a diverse group of seniors and they organized these activities in ways that gave them important insights into how seniors view air travel.

4) **Would you use this competition as an educational vehicle in the future? Why or why not?**

I can't hide the fact that I am not an engineer and many of the priority issues in the ACRP Competition call for engineering and technical solutions. If this topic remains part of the competition, I would be interested in delving further into airport operational issues involving travelers with special needs or facing mobility problems in air travel (to the extent additional work wouldn't duplicate the on-going ACRP project on the topic).

5) **Are there changes to the competition that you would suggest for future years?**

I must have seen the competition announcement very early in the process (late summer of 2015); when I emailed repeatedly for more information, no one answered. I was a bit frustrated but decided to assume the competition was active and so structured my course. Perhaps everyone was on vacation or assumed there would be no interest before the fall—but many Universities do begin in mid- to-late August as we do.

APPENDIX F
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