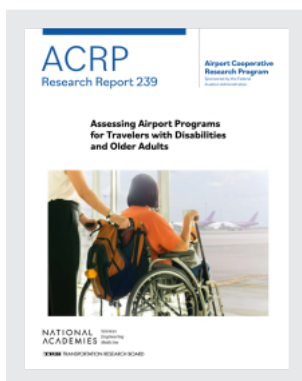


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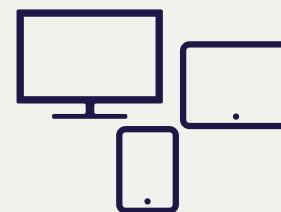
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AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP RESEARCH REPORT 239

**Assessing Airport Programs
for Travelers with Disabilities
and Older Adults**

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2023

AIRPORT COOPERATIVE RESEARCH PROGRAM

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Other contributions made through participation in focus groups and surveys by travelers, airports, and organizations are too numerous to mention but were significant in providing input on airport programs for persons with disabilities and older adults and, subsequently, in constructing notable practices presented in this Guide.


FOREWORD

By **Theresia H. Schatz**

Staff Officer

Transportation Research Board

ACRP Research Report 239: Assessing Airport Programs for Travelers with Disabilities and Older Adults is a guide that provides assessment tools, notable practices, and methodologies to help airports develop, monitor, and evaluate programs and services for travelers with disabilities and older adults with functional limitations due to age. The guide is applicable for a variety of airport types and sizes to utilize when evaluating existing programs, developing new programs, or implementing services to develop these programs.

This guide outlines the different types of disabilities and demographics of airport users and provides insight into their unique needs. It offers practical suggestions related to digital (e.g., mobile apps) and facility accessibility, assistive services, communication, wayfinding, and ground transportation access issues. Further, it includes a review of the importance of the airport's executive commitment to accessibility and inclusion for travelers with disabilities and older adults.

All types of airports, including general aviation airports, were studied to identify unique programs and services, as well as the applicable assessment tools and metrics to evaluate their performance and effectiveness. In addition, the latest emerging technologies and their potential impacts (both positive and negative) on older travelers and those with disabilities were identified. The importance of gathering feedback and input from disability groups, senior centers, and advocacy groups when developing programs and services for the target groups is also highlighted in the guide.

ACRP has undertaken several syntheses and research projects to identify and study the ways that airports provide assistance to older travelers and those with disabilities as they navigate through airports and use airport services. However, none of this research has conducted a systematic assessment of the effectiveness of these programs and services. Airports mainly have depended on anecdotal evidence to gauge the success of these programs and services. Research was needed to address this gap by providing examples of notable practices and appropriate evaluation tools.

ACRP Project 01-48, "Assessing Airport Programs for Travelers with Disabilities and Older Adults," was led by IOS Partners in association with Open Doors Organization and Butterfly Consulting. This project was conducted over a period of 16 months during the height of the COVID-19 pandemic lockdown and subsequent recovery. Despite the constraints, the work was carried out with various research participants including airports, airlines, market research firms, business partners, service providers, and travelers from various disability and older adult segments. Numerous focus groups and surveys were conducted with input from travelers, airports, and various organizations in constructing the notable practices presented in this guide. Mini case studies and examples of effective

programs, services, and strategies provide suggestions on how airports can better assess the effectiveness of their programs and meet the needs of travelers with disabilities and older adults. In addition to this guide, *ACRP WebResource 14: Tools to Assess Airport Programs for Travelers with Disabilities and Older Adults* is an associated online tool that provides summarized strategies to evaluate, monitor, and improve the effectiveness of airport programs and services for different stages of the traveler's airport journey. The tool includes video interviews with airports that are recognized as accessibility leaders in the industry. Access the tool at crp.trb.org/acrpwebresource14.



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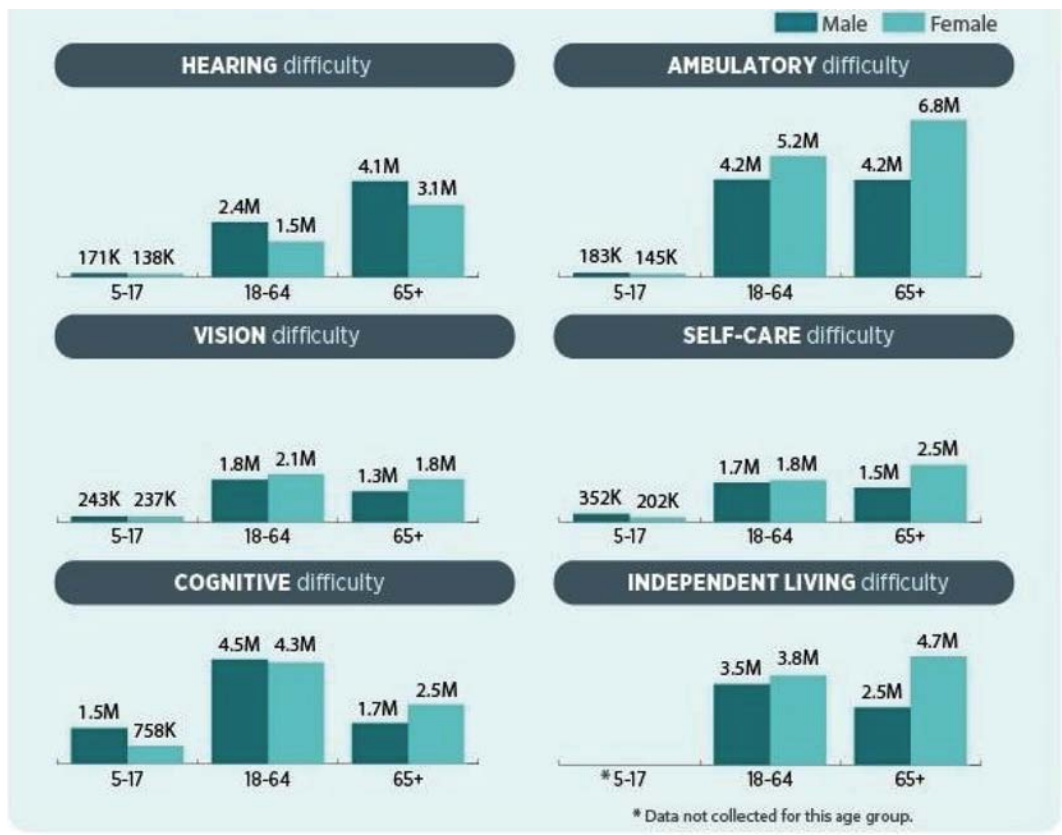


CHAPTER 1

Introduction

The travel experience can vary greatly for people embarking on the same journey, especially given the diversity of travelers. Travelers with disabilities and older adults, in particular, usually experience more challenges journeying through the airport.

The U.S. Census Bureau estimates that the total number of non-institutionalized Americans with at least one disability is 40.6 million or 12.6% of the population (U.S. Census Bureau, 2020). In addition, the Census Bureau estimates that of the 54 million U.S. residents 65 years and older as of July 1, 2019, 40% have at least one type of disability. Figure 1 provides an illustration of the number of Americans living with various disabilities by age, sex, and disability type.



Source: U.S. Census Bureau, 2018.

Figure 1. Number of Americans with a disability by age, sex, and disability type.

2 Assessing Airport Programs for Travelers with Disabilities and Older Adults

“In both the United States and Europe, the growth in demand for accessibility services is now outpacing the overall rise in passenger numbers. At large American airports, wheelchair assists already top one million per year, fueled largely by the aging population. Meanwhile, ‘failure to provide service’ makes up half of the disability-related complaints to airlines reported annually to the U.S. Department of Transportation, which doubled from 2005 to 2015.”

—Laurel Van Horn (Van Horn 2019)

Therefore, it is critical for airports to capture the voices of travelers with disabilities and older adults so that better-informed decisions can be made that will ultimately benefit both groups, potentially all travelers, and the airports.

1.1 Research Objective

The objective of this Guide is to provide the industry with resources and tools to enhance existing programs and services and develop new ones to address the needs of travelers with disabilities and older adults. This Guide also provides effective assessment tools to evaluate, monitor, and improve different aspects of the customer experience (CX) for these two target groups.

1.2 Overview

This Guide provides a variety of assessment tools, notable practices, and methodologies to guide airports in managing, monitoring, and evaluating the effectiveness of their programs/services so they can make improvements that benefit customers with disabilities or functional limitations due to age. The Guide also includes mini case studies and examples of effective programs, services, and strategies to better assess the effectiveness of airport programs and meet the needs of travelers with disabilities and older adults. This Guide is divided into eight chapters (see Table 1).

Table 1. Outline of chapters in the Guide.

Chapter	Title	Description
1	Introduction	Presents the research objective; Guide overview; research approach/methodology; intended benefits of the Guide; navigating the Guide; and limitations of the Guide.
2	Addressing Traveler Needs	Presents a pre- and post-COVID-19 market analysis of travelers with disabilities and older adults. It also summarizes tools and strategies for customer segmentation to better understand needs of different travelers within the target groups.
3	Assessing Airport Programs Through Performance Management	Presents an overview of performance management techniques including a comprehensive description of all the assessment tools presented in the Guide.
4	Airport Commitment and Strategy	Outlines strategic elements needed to promote accessibility at the executive level, human resources management techniques, and notable practices for collaboration with the airport community.
5	Key Business Partner and Airport Staff Services	Outlines the key assistive services provided by airports and airline operators and offers an overview of notable practices for managing relations with key airport stakeholders and airport staff to achieve service excellence for travelers with disabilities and older adults.
6	Effective Communication and Navigation	Presents notable practices for communication strategies for pre-trip and on-site communication with travelers with disabilities and older adults, airport navigation, as well as communication technologies specific to the target groups.
7	Facility Accessibility	Describes notable practices for accessibility on arrival, airport architectural design, and equipment accessibility.
8	Implementation Plan	Summarizes the notable practices presented in the Guide and provides guidelines on developing goals and benchmarks to measure progress towards achieving accessibility and inclusion at the airport.

1.3 Research Approach and Methodology

Given the increasing number of travelers with disabilities and older adults, satisfying the needs of these groups holistically becomes increasingly challenging. Therefore, it is incumbent upon airports to understand their own demographic base and determine the most appropriate strategies to address their own travelers' unique needs.

The research was conducted over a period of 16 months, between May 2020 and August 2021. Comprehensive data were collected from primary and secondary sources as described in the following subsections. It should be noted that this research study was conducted during the coronavirus disease 2019 (COVID-19) pandemic lockdown and subsequent recovery. Notwithstanding, the research team worked creatively with research participants—including airports, airlines, market research firms, business partners, and service providers—to achieve the objectives.

The research effort uncovered priority needs for various travelers with disabilities and older adult segments and notable programs/services beyond minimum accessibility standards to address these needs. Assessment tools in use or available for use to evaluate, monitor, and improve the effectiveness of airport programs and services for different stages of the traveler's airport journey were also identified.

1.3.1 Secondary Data Research

The secondary data research methodology included an extensive analysis of online and traditional literature, publications, reports, conference presentations, surveys, and webinars related to notable airport programs, services, and practices addressing the needs of travelers with disabilities and older adults, as well as assessment tools and techniques used to monitor and evaluate these programs and services. The research also included an analysis of notable practices from other industries that may be applied to airports. Further, the research effort built on existing information, such as related ACRP studies, and included an analysis of new and existing regulations that impact travelers with disabilities and older adults.

1.3.2 Primary Data Collection

A primary data collection effort gathered firsthand data from travelers with different disabilities and older adults on their perspectives to improve the airport experience through focus groups.

The focus groups' participants included the following segments:

- Travelers with disabilities:
 - Physical disabilities, including reduced mobility
 - Vision loss (blind or low vision)
 - Hearing loss (deaf or hard of hearing)
 - Cognitive disabilities
- Older adults over the age of 65

Additionally, interviews were conducted with airports, airlines, aviation suppliers and service providers, leaders in accessibility, and national organizations/advocacy groups to gather data and notable practices on the project topics. Organizations outside the aviation industry were interviewed to determine any notable practices meeting the needs of the target groups that might translate to airports. Furthermore, data were collected through market research and industry organization surveys to gather information on the impact of the COVID-19 pandemic on travel habits of the target groups compared to pre-COVID-19. Surveys analyzed include the

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Figure 2. Interview participants.

ACI–NA COVID-19 Airport Recovery Plan Survey, Open Doors Market Studies on Travelers with Disabilities: Travel and Hospitality, J.D. Power and Associates Travel Pulse Study, and Phoenix Marketing International Survey. This multidimensional approach allowed the research team to identify possible strategies to alleviate challenges faced by travelers with disabilities and older adults.

A Task Force Committee was also assembled, comprised of airports, airlines, suppliers, third-party service providers, market research firms, and other organizations familiar with issues related to providing service and assessing the efficacy of services for travelers, in general, and persons with disabilities and older adults, in particular. The Task Force provided feedback on the notable practices identified through the primary and secondary research, as well as input on programs/services, assessment tools/methodologies, and other practices to evaluate and improve the experience of travelers with disabilities and older adults.

1.4 Intended Benefits of the Research

The intended benefits of the research include

- Identification of gaps in addressing and assessing the needs of travelers with disabilities and older adults in their travel journeys.
- Guidelines on current and new programs/services catering to the needs of travelers with disabilities and older adults that extend beyond minimum accessibility standards.
- Noteworthy organizational strategies from recognized leaders in accessibility to ensure a fully accessible airport journey.
- Methodologies for enhancing collaboration among key service providers and business partners to enhance the journey for travelers with disabilities and older adults.
- Performance management methodologies and techniques—including benchmarks, key performance indicators (KPIs), and assessment tools—to guide airports in monitoring and evaluating their own airport programs.
- An online multimedia tool that includes summarized content and video interviews of airports' notable industry practices to reinforce and supplement information provided in the Guide.

- The latest innovations and trends to provide an enhanced experience for travelers with disabilities and older adults.
- Examples of comparable airports and other organizations that are addressing the needs of the target groups in ways that extend beyond minimum accessibility standards.
- Mini case studies that highlight examples of notable programs, services, and assessment tools currently applied at different airports that enhance the experiences of travelers with disabilities and older adults.

1.5 Navigating the Guide

Guidelines on navigating the core of this Guide (Chapters 3–7) are provided in this section.

In order to make a lasting impact on the experiences of travelers with disabilities and older adults (and travelers in general), a comprehensive, airport-wide strategic approach is necessary. The relationships between key elements and chapters in the Guide are presented in Figure 3, which depicts airport commitment and strategy as the overarching element.

Chapter 3 provides a comprehensive description of the performance management techniques, including benchmarks, KPIs, and assessment tools, to evaluate and monitor the effectiveness of airport programs and services. Each assessment tool in this chapter has an associated icon to provide an easier reference in subsequent chapters where these same assessment tools are presented (see Figure 4). The darker icons represent the tools that assess customer satisfaction, while the lighter icons represent the assessment tools that assess internal organizational performance as it relates to CX.

Chapters 4–7 contain content on four categories identified as having the greatest impact on travelers with disabilities and older adults: airport commitment and strategy; key business partners and airport staff services; effective communication and navigation; and facility



Figure 3. Linkage between key elements of the Guide.

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Figure 4. Assessment tool icons.

accessibility. These key categories are organized in the Guide as outlined earlier in Table 1. Notable programs, services, and practices as they relate to each of these categories are described in the four chapters, along with assessment tools that can be used to evaluate and monitor the notable programs/services identified.

Notable practices are those practices and initiatives that have been identified by the research team as having a positive impact on the experiences of travelers with disabilities and older adults. This includes practices and initiatives that have resulted in improved performance and in customer experiences or that are innovative and noteworthy. Notable practices have been denoted using the following icon:

Notable Practices

Each chapter includes

- Chapter introduction and opening statement.
- Main subject area outlining important strategic elements for this category/chapter.
- Notable practices within each subject area section, which provide guidelines on how airports might demonstrate a commitment to airport-wide accessibility and develop a more collaborative decision-making process.
- Assessment tools relevant to notable practices for this category. Assessment tools can be used to measure progress towards achieving established benchmarks and can include customer feedback, websites, comment cards, focus groups, and interviews or meetings with representative organizations of various traveler segments to see if standards have been appropriately set and are being met.
- Mini Case Study featuring an airport or an organization implementing notable practices.

Highlights provided throughout the Guide contain short examples of programs, services, and other initiatives being implemented by airports and organizations around the world in the following format:



On the other hand, Mini Case Studies at the end of Chapters 4–7 provide examples of individual airports implementing notable practices related to the chapter subject in greater detail.

1.6 Limitations of the Research Effort

The notable practices identified in this Guide are intended to be guidelines on the types of initiatives, programs, and services that may improve CX for travelers with disabilities and older adults. However, each airport needs to conduct an analysis of its traveler demographics and needs, accessibility status, progress towards achieving full accessibility, and available resources to identify and implement the practices most suitable for itself. The action plan and tools provided illustrate the types of steps airports can take to create a more accessible environment.



CHAPTER 2

Addressing Traveler Needs

2.1 Evolution of Travel Market for Travelers with Disabilities and Older Adults

Travelers with disabilities and older adults make up a large and growing market for the aviation industry. *ACRP Research Report 210: Innovative Solutions to Facilitate Accessibility for Airport Travelers with Disabilities* (Van Horn et al. 2020) points to a number of factors contributing to this growth:

- Aging population;
- Spread of disability rights laws worldwide, now hastened by the United Nations Convention on the Rights of Persons with Disabilities;
- Improvements in accessibility and technology;
- Increases in disposable income; and
- Dispersion of families nationwide and internationally.

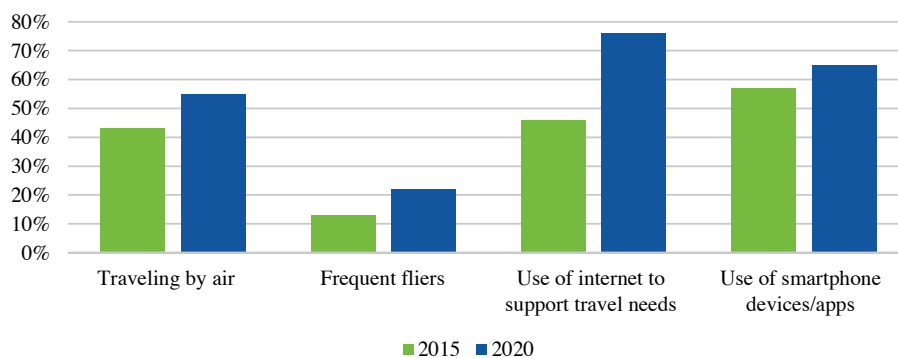
The increased affordability of air travel that underlies the enormous expansion of the market in general has fostered the rapid growth of this market segment as well. Therefore, it is critical for airports to understand the needs and wants of these two groups so that better-informed decisions can be made that ultimately benefit both travelers and airports.

This chapter analyzes the disability and older adult air travel market in the U.S. and worldwide, pre- and post-COVID-19, as well as methodologies for segmenting travelers.

2.1.1 Pre-COVID-19 Market Analysis

The Open Doors Organization’s (ODO’s) Market Study on Adult Travelers with Disabilities (see Figure 5), a nationwide survey conducted by the Harris Poll in 2020, found that 55% of travelers with disabilities traveled by air in a two-year period, up from 43% in 2015 when this study was previously conducted. There was a strong increase in frequent fliers (three or more trips by air over two years), up from 13% in 2015 to 22%. A subgroup (approximately one-fifth) of frequent travelers traveled at least six times in two years. In addition, among travelers with disabilities, there was a strong increase in internet usage to support travel needs (46% in 2015 to 76% in 2020) and an increase in the use of apps or other functions on mobile devices to assist with travel, up from 57% in 2015 to 65% in 2020. This is corroborated by a “Survey of User Needs” conducted by the Georgia Institute of Technology, which shows an increase in smartphone use from 71% in 2015–2016 to 88% in 2017–2018 by individuals with disabilities. These trends suggest that the “digital disability divide” is closing.

Furthermore, the findings indicate that most adults with disabilities continue to travel with one or more adult family members, friends, or companions, doubling their economic impact.



Source: Open Doors Organization 2020b.

Figure 5. Results of the ODO Harris Poll on travelers with disabilities.

While data from the aviation industry on travelers with disabilities are typically not made public, a few additional sources offer a glimpse of market strength in the U.S. and elsewhere prior to the pandemic. Findings from the UK Civil Aviation Authority’s (CAA’s) *CAP 1821: Airport Accessibility Report 2018/19* found that “since 2014 the number of passengers assisted increased by 49% while overall passenger numbers increased by 25%” (CAA 2019). Since not all passengers with disabilities require assistance, the actual rate of increase was likely even higher. *Aviation 2050: The Future of UK Aviation* added a further statistic: Use of such services has increased by over two-thirds in less than a decade, and demand for these services is likely to continue to rise (HM Government 2018).

2.1.2 Post-COVID-19 Market Analysis

The COVID-19 pandemic has had a dramatic effect on the aviation market. Travelers with disabilities and older adults have been affected not just by the coronavirus itself but also by the measures adopted to contain it, such as the use of face masks, requirements to keep a distance of 6 feet or more (social distancing), and seat blocking to facilitate social distancing at airports. Some of these measures, such as the use of face masks, may be an impediment to persons with certain kinds of disabilities. While these measures may be temporary, safety changes that are more positive will likely be more permanent. These changes include touchless check-in and bag drop, mobile food/retail ordering, and touchless checkout. Innovations such as Aira and Whill, originally designed to enhance independence for travelers with disabilities, are also being implemented at many airports to allow for a safer airport experience (Ozion Airport Software 2020).

Given the higher morbidity and mortality of COVID-19 among older adults and those with underlying medical conditions, these groups are likely to be more risk averse and less willing to fly. This expectation of older travelers was borne out by a Gallup Poll of more than 10,000 American adults polled July 2–14, 2020, all of whom reported flying at least once in the last year. The web-based survey found “69% of respondents aged 55 or older saying they’re uncomfortable flying, compared to 33% of those aged 18 to 35” (Goldstein 2020). On average, 52% of Americans said they were uncomfortable flying, especially on longer flights.

J.D. Power conducted a “Travel Pulse Survey” in June 2020 that included a question regarding the future travel status of persons with disabilities to enable a comparison of respondents with and without disabilities. The data received from J.D. Power for travelers with disabilities was compared with the 2020 ODO Harris Poll, which also had a question on future travel activities. Surprisingly, the Harris Poll respondents with disabilities were more ready to resume air travel

and other activities in 2021 than the general population surveyed by J.D. Power. The reason for this could be that people with disabilities, though possibly more risk averse, may also be more anxious to regain their independence after this setback than those without disabilities. The responses were also aspirational and not a measure of what respondents actually did in 2021.

2.2 Traveler Segmentation

Traditionally, market segmentation in the aviation industry has included leisure, business, and personal travel reasons as the basic segments. Segmentation theories and applications have advanced over the years to include additional segments, such as those outlined in Figure 6 for the airline industry.

ACRP Research Report 231 provides additional information on segmenting the airport passenger model (Ryan et al. 2021), as noted in Figure 7.

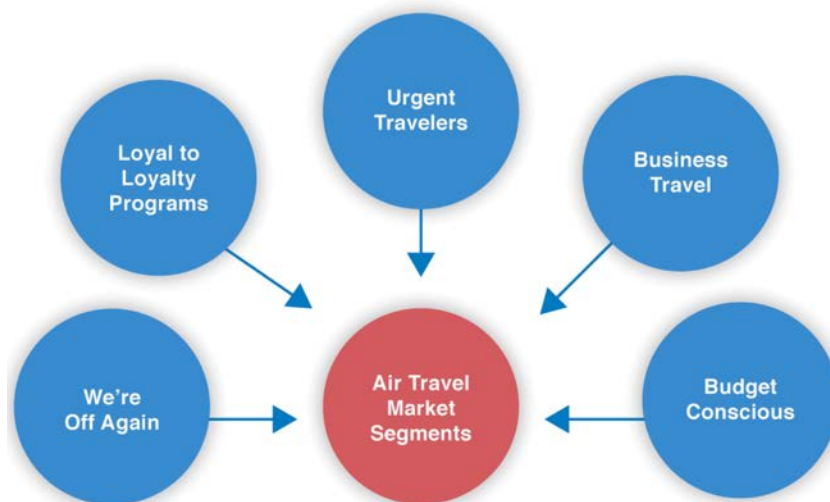
Travelers with disabilities is included as a segment, but this market is not segmented further in the report.

U.S. federal law defines disability as “a physical or mental impairment that, on a permanent or temporary basis, substantially limits one or more major life activities, has a record of such an impairment, or is regarded as having such an impairment.” Major life activities include “functions such as caring for one’s self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, and working” (The Public Interest Law Center 2022).

Customer needs at each journey point depend on the category of disability or functional limitation, level of disability, and need for assistance. As the “social model” of disability makes clear, how well one can function and whether one will need assistance also depends on the environment, not just the capacity of the individual. Disabilities may be grouped into a number of categories, as outlined in Figure 8.

Other factors that may be just as relevant for segmenting travelers into categories for the travel industry are presented in Figure 9.

These factors are also applicable for older adults, who often do not self-identify as having a disability even though they may have one or more severe functional limitations.



Source: Segmentationstudyguide.com 2021.

Figure 6. Airline industry segments.

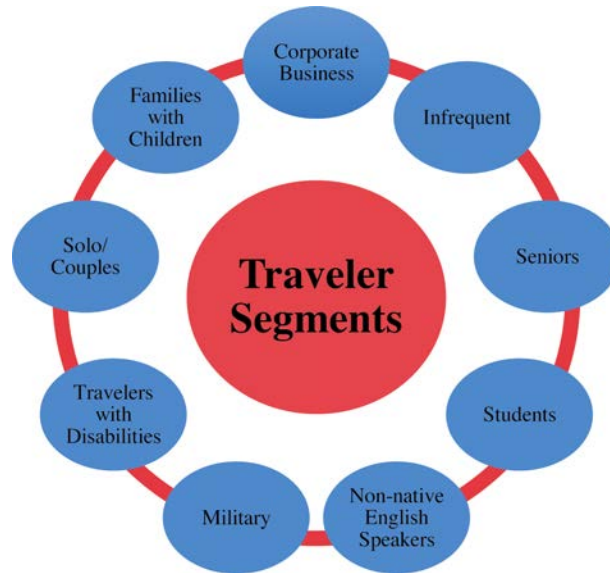
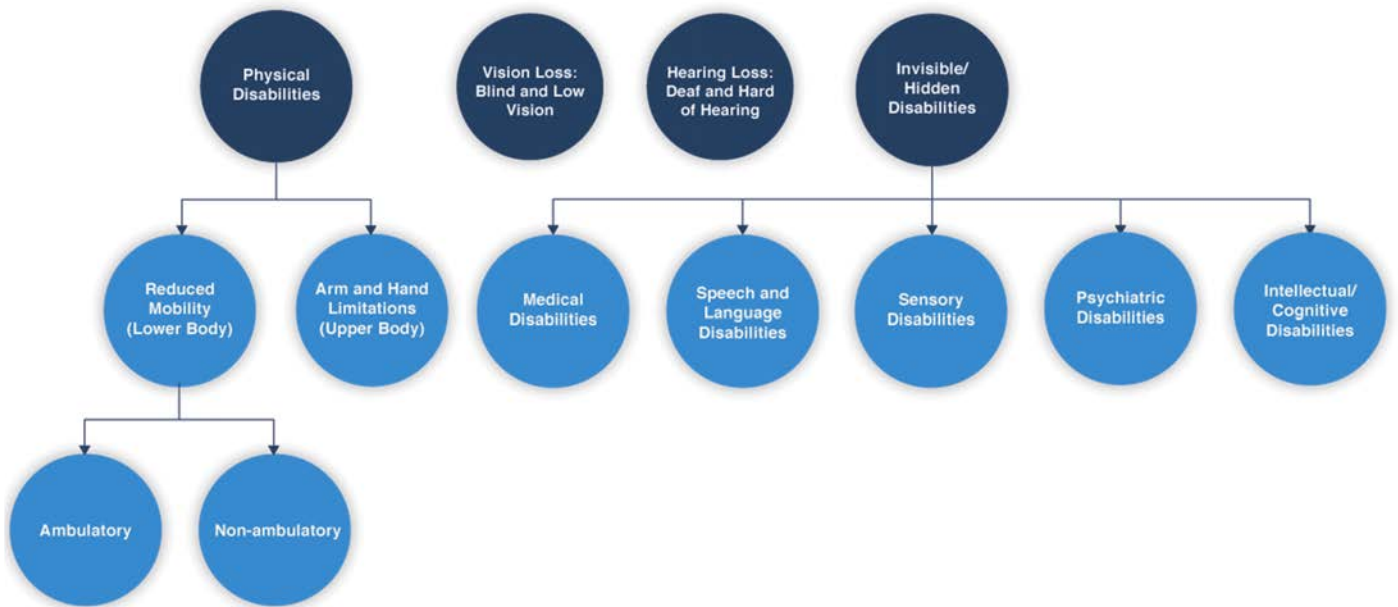


Figure 7. Traveler segments in ACRP Research Report 231.



Source: Harding et al. 2017.

Figure 8. Disability categories.

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Figure 9. Other factors to consider in segmenting travelers with disabilities.

2.3 Needs of Travelers with Disabilities and Older Adults: Industry Data

In April 2009, the UK CAA, a governmental oversight body, reached out for the first time to aviation industry and disability groups. This research resulted in a report on qualitative findings among persons with reduced mobility (PRM) by consultant SHM (SHM 2009).

The SHM report was based on interviews and workshops at Manchester Airport (MAN) and Bristol Airport (BRS). Although prepared more than 12 years ago, this report is very revealing in that it delves into the mindset of travelers with disabilities and then examines where each of the six identified dimensions comes into play most during the various stages of the journey. This provides an excellent roadmap for maximizing CX, no matter whether the airport or the airline is ultimately responsible for meeting the needs of travelers with disabilities. The key findings are summarized in Table 2.

This information resonates with managers of airports, airlines, and service companies since it emphasizes the emotional element of travel. It also addresses one of the goals of the current International Air Transport Association (IATA) accessibility initiative: to move the industry

Table 2. Key SHM findings.

Dimension of PRM Mindset	Insight Derived from SHM Research Findings
PRM passengers want to feel equal .	PRMs' expectations of the assistance service are not based on their awareness of the EC Regulation and, therefore, they are not based on an understanding of legislative detail; rather, their expectations are based on the things that will enable them to feel like an "equal" passenger.
PRM passengers want to feel in control .	PRMs need to feel in control of the assistance they receive. They don't always need assistance from one end of the customer journey to the other, but they do always need to feel as though they are "in the driving seat."
PRM passengers want to feel clear .	PRMs are not always clear on what assistance is available nor what is in or out of scope under the special assistance system.
PRM passengers want to feel listened to .	PRMs frequently find that information has not been passed through the system or acted upon intelligently at different states of the customer journey.
PRM passengers want to feel treated as individuals .	PRMs recognize that it is probably not possible to personalize special assistance fully; however, they do need to feel that there is some degree of differentiation in line with their needs.
PRM passengers want to feel reassured .	PRMs expect the service they receive to be reliable (i.e., from one journey to the next) and consistent (i.e., from one UK airport to the next). Ensuring this reliability and consistency is felt to be a key role of the CAA as the United Kingdom's aviation regulator.

Source: SHM 2009, p. 7.

away from “handling” these passengers, a term better used for cargo, and towards “serving” them as valued, equal customers.

The SHM report discusses issues that typically crop up in each stage of the customer journey and that result in expectations not being met. A brief summary of the findings—many of which echo complaints voiced by travelers in the U.S. and findings of this research effort—at each journey stage is noted as follows:

- **Booking.** Information provided concerning needs is either not recorded or not transmitted downline to airline agents and service providers; no confirmation of service requests leads to lack of assurance prior to and during the trip.
- **Arrival and check-in.** Points at which one can receive assistance vary from airport to airport, creating the initial gap in service (or “no man’s land”); travelers lack information on which to approach first, check-in or special service desk.
- **Transit (to gate).** Service provided is “one size fits all”: only wheelchair assistance is provided, rather than assistance tailored to those who are blind, deaf, of short stature, etc.; ability to use one’s own mobility device to reach the gate varies across airports, and often one has to insist; waiting with no idea how long the wait will be to receive assistance or if one has been forgotten produces great anxiety; once airside, if one needs assistance it is difficult to contact the service company; and security is especially stressful.
- **Boarding.** Failure to transmit information about the person’s needs is again a problem; assistance provided may not be appropriate; and how the boarding process is handled may be a source of embarrassment or loss of dignity.
- **Disembarking.** Waits on the plane for assistance can be long; mobility devices often go to baggage claim instead of the door of the plane; help with baggage is inadequate; and assistance to ground transportation is lacking.

The analysis of needs at each journey point has been addressed quite thoroughly in the following ACRP reports:

- *ACRP Synthesis 51: Impacts of Aging Travelers on Airports.*
- *ACRP Research Report 177: Enhancing Airport Wayfinding for Aging Travelers and Persons with Disabilities.*
- *ACRP Research Report 210: Innovative Solutions to Facilitate Accessibility for Airport Travelers with Disabilities.*

Other sources include disability blogs, websites, social media, and disability organizations.



CHAPTER 3

Assessing Airport Programs Through Performance Management

3.1 Introduction

The norm across the aviation industry is to focus on overall customer satisfaction with the airport or airline travel experience, as well as customer satisfaction with specific services throughout the journey. Some airports have made efforts to evaluate the CX of specific traveler groups, such as travelers with disabilities and older adults, beyond compliance with ADA regulations. In particular, the airports and airlines interviewed for this research are all actively seeking ways to measure how well they are serving their travelers with disabilities and older adults requiring extra assistance so that they can continue to improve their programs and facilities, as well as fill any service gaps that remain. Most airports that were interviewed are reaching beyond compliance to provide CX for these travelers that is on par with the rest of their travelers. However, this practice is not commonplace in the industry.

Although ADA addresses minimal accessibility requirements for PRM and those with vision loss, it does not adequately address the needs of all persons with disabilities or others with functional limitations. In order to create a more seamless experience for these travelers, it is necessary to adopt and implement airport-wide accessibility standards that exceed ADA requirements and are aligned with the airport's CX brand and standards for all services provided to the airport's customers. Performance management includes assessing services/programs provided to all customers, including but not limited to customers with disabilities and older adults, as a key component of service excellence.

3.1.1 Importance of Performance Management

The performance management mantra that “you cannot manage what you cannot measure and you cannot measure what you cannot define” has been ascribed to the work of world-renowned management consultant, Peter Drucker. It is imperative that the right things get measured to achieve the results that matter most.

Performance management is a broad term that includes assessment and benchmarking practices. As reported in *ACRP Report 157: Improving the Airport Customer Experience*, performance management is critical to ensuring that an airport delivers on its promise to its customers as expressed in its airport brand or detailed in its CX plan or both (Boudreau et al. 2016). Performance management involves monitoring and managing the airport's collective performance on a regular basis using published airport service standards (benchmarks) and identifying key performance measures that indicate that the airport is moving in the right direction to address drivers of customer satisfaction. Top-performing, customer-centric airports track CX KPIs as closely as they do other key financial, operational, safety, and security measures.

A key performance management element required to assess any program or service, and thereby ensure service excellence, is developing and aligning benchmarks, KPIs, and service-level agreements (SLAs). This can be accomplished through the creation of a Performance



Figure 10. CX Performance Management Plan.

Management Plan that measures compliance with CX and accessibility standards. Characteristics of a sound CX Performance Management Plan are presented in Figure 10.

3.1.2 Assessment Tools

Assessment tools are often used in conjunction with each other, and they are often integrated with yet other performance management tools—such as financial performance indicators—to design a performance management system that gives a more complete picture of how the airport is performing. The mix of performance assessment tools and the importance placed on one type of customer feedback versus another varies from airport to airport based on many factors, including size, budget, customer demographics, and airport culture/brand.

This chapter presents a variety of assessment tools and explains how they can be used to evaluate the effectiveness of programs/services for travelers with disabilities and older adults.

There are specific icons associated with each assessment tool, and these icons have been utilized throughout the report to indicate the assessment tools that apply to each notable practice or program. The darker icons distinguish the customer satisfaction assessment tools, while the lighter icons distinguish airport-wide assessment tools.

3.2 Customer Satisfaction Assessment Tools

This section details assessment tools that can be used by airports and airlines to measure, monitor, and improve airport programs and CX for travelers with disabilities and older adults.



3.2.1 Customer Satisfaction Surveys

Surveys can be effective performance management tools to derive a better understanding of customer needs, wants, expectations, perceptions, and overall satisfaction with airport services and experiences. Airports can use the information gathered from surveys to create appropriate benchmarks/KPIs to assess their services and programs and track progress towards achieving set objectives. (Section 3.4 provides further information on developing benchmarks and KPIs.) Management can then direct resources towards providing services and amenities in a manner that enhances those KPIs, thereby improving CX and overall satisfaction.

The following subsections include some of the various customer satisfaction surveys available to assess the effectiveness of programs and services for travelers with disabilities and older adults.

3.2.1.1 Industry Surveys

Numerous industry surveys—such as Airports Council International (ACI) World’s Airport Service Quality (ASQ) Program, Skytrax, and J.D. Power Syndicated North American Airport Study—query respondents on benchmarking capabilities, audits, inspections, and industry certification opportunities. Some of these surveys can be tailored to deliberately target and collect data for travelers with disabilities and older adults so that the level of service provided to them can be evaluated.

3.2.1.2 In-House Customer Surveys

The airport may design and administer its own proprietary customer satisfaction surveys tailored to the airport’s specific goals (e.g., airport parking, ground transportation, or concessions satisfaction surveys that include reasons for purchase). For example, an airport under Hermes Airports uses its own customer survey: “The airport’s own research and strategic analysis team develops and administers the studies. Using iPads and a quantitative 10-point scale, on-site personnel ask visitors about facility cleanliness, staff courtesy, speed of service, and then drill down from there. In total, they survey 4,000 to 5,000 passengers annually” (Vanderhey 2016).

Airports also rely on private companies, such as Phoenix Marketing International, to provide ongoing surveys that are specifically tailored to the demographics of their passengers and specific programs/services.

Figure 11 provides an example of phrasing an airport may use to identify its travelers with disabilities and older adults requiring additional assistance. Gathering specific information related to disabilities and functional limitations can help the airport design better interventions that target these groups.

Select any of these which apply to you (select all that apply):

- Blindness or a serious vision loss or condition (not correctable by eyeglasses or contact lenses)
- Deafness or a serious hearing loss
- A condition that substantially limits one or more basic physical activities, such as walking, climbing stairs, reaching, lifting or carrying
- A physical, mental, or emotional condition that increases the difficulty of learning, remembering, or concentrating.

Figure 11. Example of demographics question for airport survey.

3.2.1.3 End-of-Use Surveys

Surveys for website, assistive services, ground transportation, amenities, etc. The end-of-use survey can be a short one-to-three question survey or a long and detailed survey to gather specific data on the service quality.



Hermes Airports asks travelers to rate the service on a scale of 1 to 5 and “sign off” on the service provider’s smart device at the end of service use.



Heathrow Airport’s survey on their accessibility page is long and detailed to gather specific data on the experience of travelers with disabilities and those requiring extra assistance.

3.2.1.4 Accessibility Feedback/Targeted Surveys

Several airports conduct surveys that specifically target travelers with disabilities and older adults with functional limitations. This type of survey allows the airport to better isolate the issues specific to this traveler group.

3.2.1.5 Ad hoc/Intercept Surveys

These types of surveys help the airport gain a “pulse” on customer satisfaction and can be conducted via a Wi-Fi access site, field staff or volunteers administering the surveys, or two-dimensional barcodes (QR codes). Some airports require travelers to fill out a short survey in order to access the airport Wi-Fi. The downside of this method is that the data tend to be skewed since they are based on self-election of the responder rather than random responses that mirror the airport’s passenger traffic/profile.

3.2.2 Feedback from Apps and Other Smart Solutions

A number of apps and other smart solutions allow airports to better isolate data on specific traveler segments and take remedial actions accordingly.



3.2.2.1 *Avius*

Utilized to gather customer feedback on facilities such as restrooms, wheelchair service, and ground transportation services through the use of surveys or inspections via smartphone or tablet. Data can be used to monitor compliance with requirements and track progress towards achieving established benchmarks.

3.2.2.2 *Corada BlueDAG Software and Mobile Application*

This software includes all the various Americans with Disabilities Act Accessibility Guidelines (ADAAG) specifications and allows the airport's planning and development team to improve compliance. For example, the team may query all concessionaires about measurements of their accessible counters or all the parking facilities about the number of ADA spaces provided.

3.2.2.3 *PRM Assistance Software*

One PRM assistance software, Ozion PRM Manager, can be used to measure timeliness of airport assistance during the full assist, from start to finish, and segments of the journey, such as from check-in through security. Using this data, airports and service companies can identify points in the journey that exceed expected timing and work to find a resolution.

Although a customer satisfaction survey can be conducted using PRM software by having agents conduct the survey at the end of an assist, a concern is that customers may not be comfortable giving negative feedback while the agent is standing by them. Some European airports have adopted an alternative to asking for feedback on the spot and instead ask for contact information from customers so the airport can request feedback via email. Another approach is to provide a QR code to the customer to download a survey on their personal smartphone.

3.2.2.4 *Customer Relationship Management (CRM) Tools*

Utilizing a CRM system to track customer complaints and feedback and to open cases to remedy issues can be effective. A separate "accessibility" dashboard can be created to track complaints and feedback from specific traveler segments, such as travelers with disabilities and older adults.



3.2.3 Focus Groups and Intercept Interviews

Many airports conduct on-site focus groups or intercept interviews using their own staff, coordination with a local university, or a third-party provider to gain more insight into their customers' needs and to assess their CX program. These assessment tools are helpful for providing a variety of measures of success for airports. Both focus groups and intercept interviews of travelers with disabilities and older adults are effective and easily implemented assessment tools.

Focus groups and intercept interviews can provide a depth of information that is difficult to obtain from other assessment tools. They allow the moderator to delve into the "why" of poor performance. Follow-up workshops or meetings to dissect the findings and potential ongoing strategies and solutions are important.



3.2.4 Comment/Feedback Tracking

Customer feedback received via websites, apps, email, comment cards, online reviews, industry partner customer comment cards, and social media can be tracked and analyzed. *ACRP Research Report 231* provides tools that airports may use to conduct their own social media and media analysis (Ryan et al. 2021).

Select key words (such as "wheelchair," "service animals," "accessibility," or "disability") can be utilized to tag comments and feedback. Certain software can identify negative campaigns against the airport so that they can be addressed faster than surveys and other less frequent data

collection methodologies. Responding to comments, where possible, is also important to let customers know they have been heard.

Software designed to manage and analyze customer feedback comments is available; see the following examples of airports utilizing social media tools to manage and analyze customer feedback for more information.



Hartsfield-Jackson Atlanta International Airport (ATL) utilizes a program which mines social media for customer feedback and delivers it to one’s dashboard in real-time. The program identifies Enablers and Detractors and can generate a Net Promoter Score.



Portland International Airport (PDX) utilizes an all-in-one social media management platform to listen to and analyze the voice of its customers.



Phoenix Desert Botanical Garden utilizes a tool that sends a text message with simple questions for customers to answer about their experience using a video, audio or text response. The product then analyzes their responses and tracks ongoing sentiment. It also allows for an organization to remotely collect, analyze, and share real-time customer testimonials and video surveys at scale.

3.2.5 Mystery Shopping

According to Customer Service Experts (or CXE) as of 2020, very few airports conduct mystery shopping, focus groups, or other evaluations that focus on accessibility or travelers with disabilities. Mystery shoppers are usually provided through third-party service providers or in partnership with universities/colleges utilizing students. Unannounced shoppers who are unknown to the airport staff and/or business partners serve as proxies for diverse segments of airport customers. These shoppers test and evaluate the performance of airport staff or business partner employees’ interactions with customers based on service standards set by the airport.



PHOENIX INTERNATIONAL ADA COMPLIANT MYSTERY SHOPPING

An airport consistently identified as including ADA compliance or people with disabilities in customer experience evaluations is the **Phoenix International Airport (PHX)**, which was the first to require a percentage of “mystery shoppers” to focus on ADA Compliance (CXE, 2020)

Shoppers also provide open-ended assessments based on their observations and experiences during the shopping interaction.

When developing mystery shopping initiatives for programs and services related to travelers with disabilities, people with disabilities need to actually “shop” the service, otherwise the results would lack reliability.

A person without a disability may not have the depth of experience required to fully understand the service quality experience. Mystery shopping focuses on behaviors and interactions in a natural environment and evaluates the quality of a service from a “whole picture” viewpoint. It allows for coachable moments with staff and also provides more opportunities to gather feedback from people actually using a service.



3.2.6 Electronic/Static Rating System

An example of an electronic rating system is HappyOrNot, a device that has four simple buttons with pictograms that are self-explanatory, require no translation, and enable immediate customer feedback. The devices are generally located at touchpoints—such as airport security, check-in, information counters, baggage claim, and restrooms—where frequency of customers pushing the red button alerts custodial staff to a problem. Results of each button press are logged, transferred via secure network to a web-based reporting system, and then consolidated into charts and graphs for airports to analyze/respond in real time (Petkar 2018). According to the creator of HappyOrNot, the buttons also help customers feel “empowered and valued” (Petkar 2018). This tool can be placed next to facilities frequently utilized by travelers with disabilities or older adults, such as sensory rooms and adult changing facilities.

Similarly, Fun and Function, a company dedicated to facilities and services for children with autism and developmental disabilities, also uses smiley faces to elicit feedback from individuals who may be non-verbal. Figure 12 displays a chart that demonstrates how teachers or caregivers can use the tool to gauge a child’s feelings before and after an activity.

In this case, the data are recorded on paper rather than with buttons. In the airport context, this tool could be used in conjunction with a visit to a sensory room or another facility (Fun and Function 2020).



3.2.7 Audits/Inspections

Audits and inspections are conducted to ensure compliance with established standards and regulations, but they can also be used to identify ways to improve the experience by assessing the quality of airport services, facilities, programs, etc. Inspections are usually scheduled, and inspectors require specific expertise to assess performance levels at the airport. Inspections may be conducted by either experienced airport staff or third-party providers.

3.2.7.1 Self-Assessment

A self-assessment is required by the FAA for the airport and its services to be compliant with ADA requirements. An example of the FAA self-assessment tool ADA Self-Assessment 151022 is available at https://www.faa.gov/about/office_org/headquarters_offices/acr/eoo_training/past_conferences/airport_civil_rights_training_seventh_national_2016_conference/media/ADA/ADA_Self_Assessment_Form.pdf.

VARIETY OF DATA-TRACKING TOOLS

Measure the impact on behavior and satisfaction, including child-friendly data tracking tools



Source: Fun and Function 2017.

Figure 12. Static feedback tool.

3.2.7.2 Internal Accessibility Audit

A number of airports conduct their own internal accessibility audits to identify ways in which they might improve universal access and mobility support; some examples include Vancouver International Airport (YVR), Winnipeg James Armstrong Richardson International Airport (YWG), and Brisbane Australia Airport.



Vancouver International Airport (YVR) engaged the Rick Hansen Foundation to conduct an assessment of their facilities under its "RHF Accessibility Certification Program" (RHFAC) and was the first airport to receive the "Accessibility Certified Gold" rating. As described by the Rick Hansen Foundation website, "the RHFAC is the first program to measure the level of meaningful access beyond building code, and is based upon the holistic user experience of people with varying disabilities affecting their mobility, vision and hearing."

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Winnipeg International Airport (YWG) conducts two internal accessibility audits: one on the built environment or design environment, and the other on the sensory environment. The airport's sensory environment audit covers experiential elements including the way in which people experience the terminal services and products through the various senses. This audit points out things that the airport might need to change. Is there airflow ventilation? Is there noise or aroma? How high are the ceilings in terms of noise and echoing? What is the decibel level of the audible alarm at the baggage carousels? Does the glass create a glare?



Another type of accessibility tool has been developed in Brisbane, Australia, the Dementia Friendly Community Environmental Assessment Tool (DFC-EAT). It is designed for companies to self-assess how welcoming their facilities are to persons with dementia, based on 8 principles of design. For each principle, an airport or other business can rate how well their facility meets the criteria (Bennett & Fleming 2015). A toolkit as well as videos and other training materials is available online from Dementia Training Australia. **Brisbane Australia Airport** was named Australia's first dementia-friendly airport by Alzheimer's Australia in 2017 after taking this audit and launching a new guide: *Ensuring a Smooth Journey: A Guide to Brisbane Airport for People Living with Dementia and their Travel Companions*

3.2.7.3 Spot Checks

During a spot check, a team member shadows an agent and traveler while assistance is provided to see if there are any barriers, challenges, or negative aspects of the service.

3.2.8 Usage Data

Usage data can measure the popularity or use of programs by examining the level of participation. Some examples of usage data include

- Data from service providers on the time spent using the program and number of travelers serviced.
- Data from Visual Guidance and other disability apps can be used to measure the value of a program.
- Programs and services provided by the airport, such as number of people requesting the hidden disabilities lanyard.
- Use of mobile apps or number of people visiting the accessibility page on the airport website, if applicable. For example, Houston Airports tracks the number of people who use the Access Houston app daily (see Figure 13).

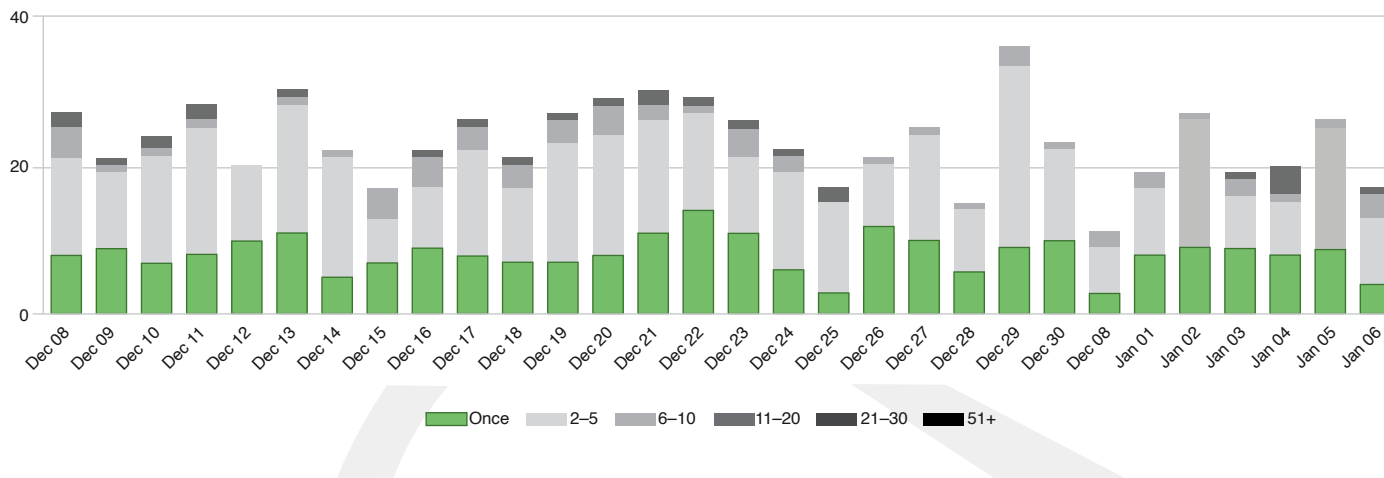
3.2.9 Other Tools

Various assessment tools that are less commonly used for travelers with disabilities and older adults can still be very useful in isolating data regarding these types of travelers.

3.2.9.1 Scorecards/Dashboards

This tool can be used to measure the performance of services provided and can be included as part of SLAs to have more oversight of the service provided on the airport's behalf. This

Daily Active Devices



Source: Joniec 2020.

Figure 13. Daily use of Access Houston app.

technology provides instant information on activities, such as number of people in line at security, so that action may be taken to relieve the situation immediately, if needed. For example, dashboards may be used as a visual check of current conditions in the airport.

3.2.9.2 Shadowing

Shadowing involves tracking the end-to-end journey of travelers by following them as early as departure from their home, through the airport, and up to the plane for departure (and the return journey). This can be recorded using video diaries or note-taking.

3.2.9.3 Employee Comments/Feedback

An employee feedback form/comment card (online or paper) can be made available for employees to provide feedback on whether there were any issues in delivering service to a traveler. Also, feedback can be solicited specifically from employees with disabilities and older employees/volunteers on how to improve facilities, programs, and services to better cater to the needs of the two groups.

3.2.9.4 Pilot Programs

Pilot programs can be a highly effective method to test concepts before they are released to the general public. The initial pilot test can be conducted by the airport team members and, subsequently, by the disability and older adult communities. Elements to be assessed include the overall effectiveness of the program, technical aspects, customer service, and any positive/negative feedback from airport and community participants.

EVALUATION TOOLS AT CHICAGO CHILDREN'S MUSEUM



Source: Chicago Children's Museum

Chicago Children's Museum's (CCM) programs and services undergo a robust evaluation process to engage the community and ensure needs are being met at the development stage. The CCM invites the Chicago Mayor's Office for People with Disabilities along with the Shirley Ryan Ability Lab (SRAL) to visit the exhibit/program to gather feedback on current and new design strategies. The community also gives feedback such as their experience getting to and navigating through the museum. A key internal resource is the Play for All Team who develops and organizes the Play for All events. This team uses a Universal Design Assessment along with their knowledge and expertise related to visitors with disabilities to ensure the final exhibit/program/service is accessible to the greatest number of visitors.

Once an exhibit is "live", the CCM will occasionally conduct a full evaluation of the exhibit, as well as ongoing evaluations from the community. The expectation is that complaints are resolved within 24 hours.

3.2.9.5 Journey Mapping

Journey mapping can be an effective tool to measure the CX and identify specific pain points. Journey mapping allows the airport to isolate the experience for specific segments. *ACRP Research Report 231* provides a journey mapping toolkit, including recommendations on how to map the journey and analyze data for specific traveler segments (Ryan et al. 2021).

3.2.9.6 Familiarization Tours

Airports that offer familiarization tours, often in cooperation with a local rehabilitative center and/or an airline for a holistic experience, use this as a way to educate travelers on as many aspects of the journey as they can. Feedback can be gathered from participants throughout the experience or via an end-of-use survey.

3.2.9.7 Community Feedback

Reaching out to the disability and older adult communities to request input through participation—virtually, in person, over telephone, or by email—in an airport committee on the effectiveness of programs/services offered or what they would like to see at the airport can be helpful. Outreach can be conducted via individual participation, national organizations, advocacy groups, and other organizations.

3.2.9.8 Use of Technology to Capture Reactions

An innovative methodology being utilized by the Chicago Children's Museum is the use of cameras and microphones set up in these spaces to research how children and families learn in an informal learning environment. Participants are made aware they are being recorded.

WINNIPEG JAMES ARMSTRONG RICHARDSON INTERNATIONAL AIRPORT (YWG) "LIVED EXPERIENCE"



The aim of the “YWG Lived Experience” was to gather feedback on the airport’s journey points. Sixteen individuals with different disabilities, along with representatives from partner and community organizations, moved through a mock travel experience in order to evaluate the measures in place to support them at the airport. Participants had to check in for their flight, drop off their bags and navigate the passenger process through the international arrivals process where they used the primary inspection kiosks. According to an airport blog, “The survey results will be used to guide future initiatives to help further create an inclusive airport environment.”

3.3 Airport-Wide Assessment Tools

There are several assessment tools that can be utilized to measure the airport’s internal performance as it impacts CX.

3.3.1 Employee Engagement Feedback

Employee engagement includes active involvement by senior management in the process of engaging with employees through surveys, trainings, workshops, and/or individual or small group meetings to get their feedback. Some airports survey their employees annually to gain their feedback on the “health” of the organization (e.g., do employees enjoy their job and the environment, and are they rewarded adequately for their work). Part of that engagement is becoming aware of needed or desired training or professional development so that the employees can gain more proficiency in their job.



3.3.2 Disability:IN’s Disability Equality Index

A joint initiative of Disability:IN and the American Association of People with Disabilities, or AAPD, the Disability Equality Index (DEI) is an objective, reflective, forward-thinking, and confidential rating tool to assist businesses in developing an inclusive workforce.

The DEI is a comprehensive benchmarking tool that helps companies build a roadmap of measurable, tangible actions that they can take to achieve disability inclusion and equality. Each company receives a score on a scale of 0 to 100, with those earning 80 and above recognized as “Best Places to Work for Disability Inclusion.”



3.3.3 Reward and Recognition Programs

Reward and recognition programs can assist in improving the employee experience which, in turn, translates to enhancing CX. Some airports have formal reward and recognition programs in place that entail nomination processes, gifts, and recognition ceremonies on an ad hoc or regular basis. Others have a more ongoing approach to recognition, such as sharing complimentary customer letters and comment cards regarding employees with them, along with providing certificates for excellent service.

Customers could be asked at the end of surveys if they want to acknowledge someone for going above and beyond for them. If so, these acknowledgments can be forwarded for reward and recognition opportunities.





3.3.4 Standards and Checklist for Excellence in Airport-Wide Accessibility Service

See Chapters 4–7 for notable practices an airport may implement to achieve airport-wide accessibility service excellence. Chapter 8 provides further information on how an airport can track its progress towards achieving established goals to become more accessible.

3.4 Benchmarks and KPIs

In order for performance management and assessment tools to be effective, specific benchmarks and key performance indicators (KPIs) must be established. Benchmarking is a method used by airports to compare themselves internally against their own metrics or externally against other airports or the performance of other related industries. Airports monitor all their traditional critical functions, such as number of airlines serving the airport, number of passengers traveling through the airport, amount of cargo, ramp operations, safety and security, and revenue. Each department of an airport has its own set of benchmarks to monitor. Increasingly, airport CX programs are creating new benchmarks for airports to assess program effectiveness for all travelers and, in some cases, for specific segments such as travelers with disabilities and older adults requiring additional assistance. KPIs are a key element of benchmarking, necessary for measuring progress towards achieving established benchmarks.

Figure 14 summarizes the steps in determining which KPIs will support benchmarks.

More detailed steps can include the following but may differ, depending on the airport's current practices in creating benchmarks and KPIs (Qlik 2021):

- Describe the intended results of benchmarking and KPIs.
- Tie strategies into measurable units that help create the best KPIs to measure achievement.
- Choose the right KPI by determining why you are measuring the benchmark—for example, to find out the progress made over a past period of time versus the current period (lagging indicator). Leading indicators capture data that have an effect on a specified outcome;

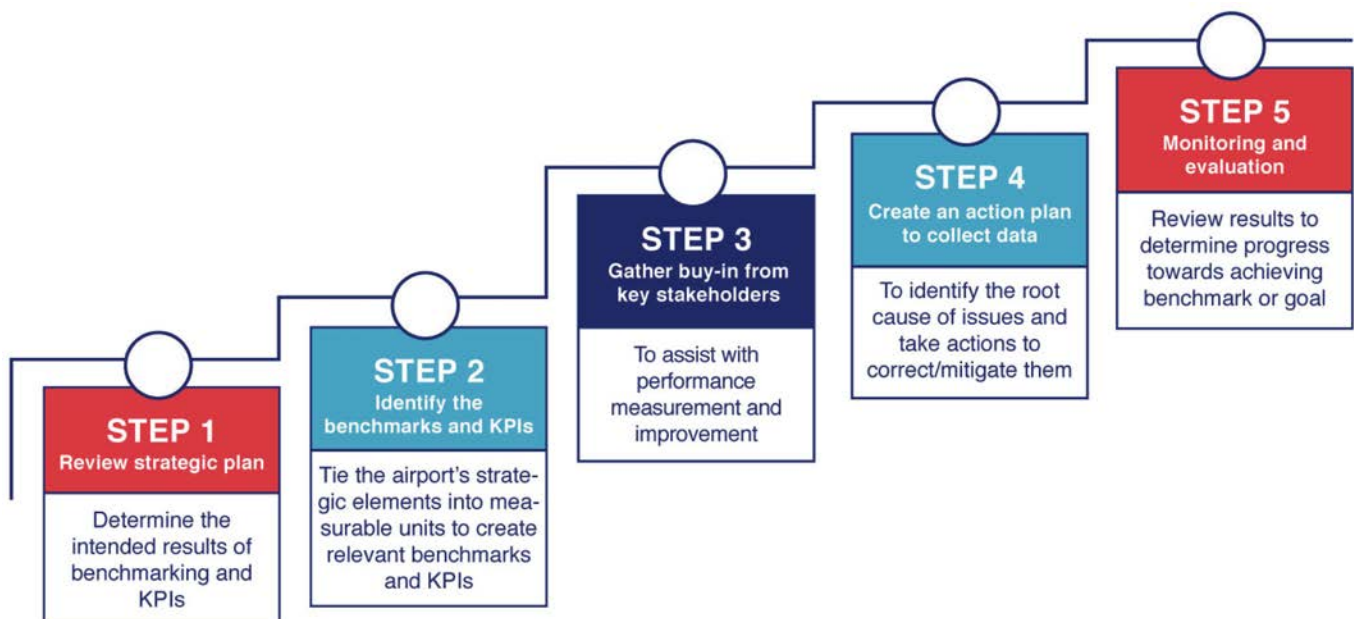


Figure 14. Steps to determine KPIs.

an example would be a decrease in number of passengers seeking information on who to contact for assistance. The root cause may be a change in the website design that allows passengers to find the information more easily. Determining how many people viewed the website and asked questions over the period prior to the changes in the website versus the number of people viewing the website and asking questions currently would be a lagging indicator. It is important to decide what you want to know and why.

- Identify which indicators make a bigger impact.
- Leading: Test your assumptions with data and track the impact of actions over a period of time.
- Lagging: Choose metrics that capture progress towards the desired outcomes.
- Develop a strategy to secure agreement among stakeholders to assist with performance measurement and improvement.
- Create a structured program to increase data literacy to ensure that those accountable for the results understand the need and background for benchmarks and KPIs.
- Assign ownership to the right people within the airport.
- Establish the platform so that people can drill down to the reasons for changes in the KPIs to understand the root cause and be able to take actions to continue or change the root cause or KPI.
- Monitor and evaluate the process of reviewing KPIs to determine progress towards achieving a benchmark or goal.
 - Schedule reports on a recurring cycle.
 - Ask questions on trends or significant changes or underperformance.
 - Update KPIs as needed and inform stakeholders of all updates.
- Revise KPIs as needed to achieve results.

“A Complete Guide to Key Performance Indicators” provides excellent guidelines for the commonly used acronym “SMARTER” (Indeed 2021) that can be applied to creating good KPIs, as summarized in Figure 15.

The article also provides some examples of customer service–based KPIs. Some of the more relevant KPIs that can be applied to airports include

- Customer satisfaction or changes in customer satisfaction scores;
- Net Promoter Score (NPS) improvement;
- Customer support responses and the time to resolve issues;
- Number of customer service calls into the airport or requests through various sources, such as comments on the website, business partners, social media, or surveys and interviews of passengers; and
- Number of customer complaints versus compliments via the various sources.

Table 3 provides a sample template to develop objectives, benchmarks, and KPIs for measuring the effectiveness of programs and services targeted to travelers with disabilities and older adults. This example has been provided for illustrative purposes only. *ACRP Research Report 231* contains further guidelines for airports to develop their own customer and employee experience benchmarks and KPIs (Ryan et al. 2021).

Performance management of CX across the entire airport journey is critical to ensure that the airport is delivering on its strategic CX promise to all of its customers, including travelers with disabilities and older adults. Without effective performance management and market research programs, it is difficult for airports to know the right actions to take to improve customer satisfaction. It also becomes challenging for airports to know whether their actions are effective at enhancing their image and increasing customer satisfaction, which generally would lead to increased non-aeronautical revenues.



Figure 15. SMARTER guidelines for developing KPIs.

Table 3. Sample benchmarks and KPIs for measuring customer satisfaction.

Objective	Sample Benchmarks	Key Performance Indicators	Assessment Tools
Improve experience for travelers with disabilities and older adults.	<p>For travelers with disabilities and older adults, set stretch but realistic, continuous improvement targets in:</p> <ul style="list-style-type: none"> • Customer satisfaction scores each year, • Sentiment scores on social media, and • NPS. 	<ul style="list-style-type: none"> • Track 100% of customer complaints and set an initial stretch but realistic target number of complaints beyond baseline to be closed within 24 hours. Increase target on a regular basis. • Provide at least four hours of CX/CS, including disability awareness training, annually to all new and existing employees and volunteers with high customer touchpoints. • Assess employees to gauge competency in disability awareness. • Track feedback from customer service surveys, social media, and comment cards specifically targeted to travelers with disabilities and older adults for increased customer satisfaction and decreased complaints. • Apply journey mapping on a regular basis to understand customers' needs and perceptions. 	<ul style="list-style-type: none"> • Customer complaints versus compliments via website, surveys, and social media. • Number of employees participating in disability awareness training.

3.5 Longer-Term Initiatives

Some suggested assessment tools and supporting practices require legislative change and significant investment, but they are nonetheless important to consider:

- Establish a single, harmonized metric for wait times for assistive services under the Air Carrier Access Act (ACAA). While Part 382 Regulations for ACAA mandate that customers who are not independently mobile may not be left unattended for more than 30 minutes, some airlines require their service providers to check after 15 minutes, others after 20 minutes. A harmonized metric, particularly for the wait time for assistance upon arriving at the airport for departure, would be beneficial for travelers with disabilities and older adults. Standards currently exist in Europe, but there are none in the U.S.
- Establish a uniform survey of assistance services that can be utilized by all airports, and establish guidelines on service-level standards that should be achieved and how they can be monitored, managed, and met. A similar type of survey is provided by the UK CAA, and all airports are required to report feedback from the seventeen-question survey. Airports can create their own survey, but they still have to report the results. *CAP1228: Guidance on Quality Standards under Regulation EC 1107/2006* details the regulatory requirements regarding the service-level standards at UK airports (Civil Aviation Authority 2019).
- Develop legislation with quality measurements to be met and penalties for noncompliance. For example, in October 2019, the Commission for Aviation Regulation Ireland added a long list of quality measurements to the waiting time limits previously mandated. Failure to meet the new standards will result in penalties to the airport in the form of reduced airport charges (i.e., per-passenger fees charged by the airlines) (Commission for Aviation Regulation 2019).

3.6 Mini Case Study

A mini case study on the Port Authority of New York and New Jersey (PANYNJ) addresses the need for establishing standards so that benchmarking, KPIs, and action plans to correct deficiencies may be formulated. PANYNJ has been recognized by the industry as a leader in providing programs and services that meet travelers' needs.

MINI CASE STUDY: PORT AUTHORITY OF NEW YORK NEW JERSEY (PANYNJ) MANUAL OF DESIGN STANDARDS AND CUSTOMER CARE MANUAL

Example of creating standards, benchmarking practices and KPIs for every division at the airport

Region: East Coast

The Port Authority of New York and New Jersey (PANYNJ) may be unique among U.S. airports in that it produces not only a Manual of Design Standards but also a Customer Care Manual that explicitly states the responsibilities and requirements for all stakeholders in meeting the needs of passengers with disabilities.

When recently revising this Manual, the Port Authority took a much closer look at how services are provided by conducting a detailed “journey mapping” exercise where they shadowed travelers with a variety of disabilities. In the process they engaged and conducted site inspections with the community in order to examine every touch point (from home to arrival at the airport, check in, security, gates, etc.) with regard to accessibility and customer experience requirements.

As a result of the detailed “journey mapping” exercise, the Port Authority determined that the community’s identity falls into two typologies: people who “require assistance” and those who are “self-assisted.” Under this new model, terminal managers/operators (airlines) have been asked to produce a service excellence action plan that explains how each journey step will address the needs of each typology, “assisted” and “self-assisted.” In this process, these airlines will be setting KPIs and SLAs in coordination with the other stakeholders who are also involved in providing services at each journey point. While not set by the Port Authority, the terminal operators will need to meet norms “acceptable” to the Port Authority.

For this “journey mapping,” the PANYNJ reached out to local disability organizations and also involved their Abilities Network, a disability Business Resource Group (BRG). BRG also provides feedback to the Aviation Group on other facilities and is used as an in-house focus group.

It should be noted that in the 6th edition of their Customer Care Manual, PANYNJ grouped more than just customers with disabilities into their definition of “Passengers with Reduced Mobility.” These “include, but are not limited to:”

1. Persons with disabilities as defined by the Americans with Disabilities Act (ADA) as an individual with “a physical or mental impairment that substantially limits one or more major life activities.” Major life activities include such activities as caring for one’s self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, and working.
2. Passengers traveling with children and infants, or unaccompanied minors.
3. Passengers that do not speak English.
4. Passengers requiring/requesting the aid of a mobility assistance representative.



Source: PANYNJ


 CHAPTER 4

Airport Commitment and Strategy

4.1 Introduction

Enhancing the experience of travelers with disabilities and older adults begins with an executive commitment and a defined strategy. Airports that verbalize and implement a strategic, holistic, and seamless approach to CX management airport-wide observe higher customer satisfaction across all customer demographics, including travelers with disabilities and older adults.

U.S. airports have increasingly embraced leadership of, and responsibility for, CX management airport-wide, working in collaboration with their airport community. Research confirms that the airports identified as accessibility leaders in addressing the needs of and assessing the services for people with disabilities and older adults also demonstrate the characteristics of leading-edge airport types (see Figure 16).

All four of the leading-edge CX airport types share certain characteristics that contribute to their recognition by the industry and by their customers as CX leaders. Some of these characteristics are provided in the following list:

- **CX Strategy.** A more holistic approach to CX management and customer service by senior leadership, incorporating CX in all aspects of planning, operation, services, amenities, and airport branding.
- **Stakeholder Collaboration.** Collaborate with business partners and stakeholders and establish strategic CX approach and standards for the airport service delivery chain.
- **Employee Engagement.** Value and engage all airport employees.
- **Performance Management.** Assess airport-wide performance using established standards.
- **Effective Communication.** Communicate a consistent CX message; messages are aligned with the airport brand.
- **Community Relations.** The airport is highly regarded in the community and often a source of civic pride.

Striving for and attaining these characteristics provides a solid foundation for achieving full accessibility and inclusion at an airport.

This chapter covers some of the elements needed to establish an executive commitment and define a strategy for accessibility and inclusion:

- Strategic elements that contribute to achieving full accessibility and inclusion (Section 4.2);
- Airport-wide human resources management (Section 4.3);
- Accessibility and disability awareness training (Section 4.4);
- SLAs, contracts, and other methods of oversight to ensure a consistent level of excellent service among all service providers (Section 4.5);
- Managing service gaps in the experience (Section 4.6); and
- Collaboration with communities of older adults and persons with disabilities (Section 4.7).

Navigating the Chapter

This chapter is divided into main subject areas with notable practices, benchmarks, and assessment tools provided for each subject. A mini case study that illustrates a number of notable practices is included at the end of the chapter.



Source: Boudreau et al. 2016.

Figure 16. *Four approaches to improving customer experience.*

4.2 Strategic Elements

Airport leadership's commitment to moving beyond basic ADA compliance and towards developing total accessibility throughout the airport is critical for developing a culture of accessibility and inclusion.

When those in a senior leadership position show commitment to developing a sound disability inclusion strategy, there tends to be a greater push company-wide for accessibility and inclusion (Business Disability Forum, 2020).

Strategic elements that contribute to achieving full accessibility and inclusion at the airport include

- Referencing accessibility goals throughout the airport's strategic plan,
- Assigning responsibilities to key airport staff to address accessibility goals and KPI targets,
- Encouraging collaborative decision-making among key players,
- Incorporating the traveler's perspective in program design and implementation, and
- Aligning CX standards for all traveler segments.

4.2.1 Commitment to Airport-Wide Accessibility and Collaborative Decision-Making

The following notable practices are guidelines on how airports might demonstrate a commitment to airport-wide accessibility and develop a more collaborative decision-making process.

Notable Practices

Review of Airport Strategic Plan. Review the current Airport Strategic Plan or Airport CX Plan to ensure that it demonstrates the airport's commitment to airport-wide accessibility throughout the organization.

Commitment to Accessibility. Commit to making accessibility an essential component of the airport's CX brand and service delivery strategy rather than attempting to address each gap



Source: Coll 2019.

Figure 17. ACI's airport customer experience management.

individually. This can be accomplished through a strategic, continuous improvement, service excellence approach to implementing an airport-wide CX/customer service (CS) brand that includes accessibility, service standards, performance management, and a communications program. ACI's Airport Customer Experience Accreditation model (see Figure 17) is an example of a model that may be applied to all services provided to travelers throughout the airport journey.

Unified Accessibility Action Plan. Develop and implement a unified accessibility action plan for the airport (if there is no current unified airport-wide accessibility plan) in collaboration with the airport community and affected traveler segments (i.e., disability and older adult populations). This Guide provides guidelines on developing short-term and longer-term strategic plans to address accessibility airport-wide.

Long-Term Inclusive Strategic Plan. Develop a long-term strategic plan for including accessibility in services provided throughout the airport regardless of the service provider. If organizational policy or procedural changes are needed, create a sequential plan to achieve this objective.

4.2.2 Alignment of Reporting Structure and Coordination of CX with Accessibility Strategies and Activities

ADA coordinators are critical in creating and maintaining accessibility at airports, including oversight of lessees and air carriers in regard to ADA compliance. However, little has been written regarding the requirements and duties of this position. The title of the acting

ADA coordinator at an airport can vary depending on the airport's organizational structure. Some airports have a role solely designated to handle ADA topics, while others may use the city's ADA coordinator or assign the role as a secondary duty to another employee (Smith and Haines 2018). The synergies between CX/CS and accessibility are numerous, and the efforts and initiatives of each should be aligned and leveraged in collaboration with the airport community and organizations that advocate for people with disabilities and older adults.

The following notable practices are guidelines on how airports may enhance the organizational reporting structure and coordination of CX and accessibility activities.

Notable Practices

Review of the Organizational Chart. Review the organizational chart to determine the reporting structure and placement of the ADA coordinator within the organization in relation to the CX/CS senior manager position. The long-term goal may be to restructure the organization; however, in the short term, if the CX manager and ADA staff do not report to the same executive manager, they should be required to work closely together to ensure that their efforts are in concert.

Inclusion of ADA Coordinator(s). Include the ADA coordinator in appropriate CX meetings and in all meetings addressing accessibility matters.

Inclusion of CX Team. Include the CX team in appropriate ADA-related meetings.

Merging of CX and ADA under the Same Management. Consider reorganization of departments and divisions so that both CX staff and ADA staff report to the same senior or executive manager. The CX manager and ADA coordinator should report directly to executive management, and they should have adequate support to effectively and proactively manage the airport's CX/CS accessibility programs in coordination with other senior-level executives.

Improvement of Information Flow. Address how information is shared through data and resources within the organization to ensure that decisions are made throughout the airport collaboratively to address ADA and accessibility issues beyond the requirements of the FAA and ADA.

4.2.3 Inclusion of All Travelers in Program Design and Implementation

Airport executive management needs to champion and consistently communicate an airport-wide commitment to accessibility and equitable services for travelers with disabilities and older adults. To achieve this goal, management should include representation of all traveler segments in program design and implementation.

The following guidelines ensure that all travelers are included in program design and implementation.

Notable Practices

Advisory Committees. Coordinate ADA, CX/CS, performance, and advisory committees to ensure all members are informed of traveler needs, including needs of those with disabilities and older adults; resolve action items that improve customer experiences; and review the results of airport assessments that gauge airport performance and customer satisfaction.

Inclusion of Persons with Disabilities. Include representatives of persons with disabilities and older adults in program design, implementation, and assessment of effectiveness.

To ensure that this is an ongoing process, a number of airports in the U.S. have established disability advisory boards that meet regularly to provide feedback, as needed, and promote airport services and initiatives to the local community. For guidelines on setting up such advisory committees, refer to *ACRP Research Report 210* (Van Horn et al. 2020, Chapter 10.6, pp. 141–143).

Accessibility Initiatives. Launch executive management–sponsored, airport-wide accessibility initiatives, complete with accessibility service standards aligned with the airport’s CX/CS brand and service delivery strategy.

Performance Management Benchmarks and Assessment Tools. Establish performance management benchmarks and implement appropriate assessment tools to determine whether airport initiatives have been effective at improving accessibility levels throughout the airport.

Communications Programs. Design and implement communications programs to promote accessibility initiatives and inclusion throughout the organization and reinforce individual and department or division achievements to improve accessibility.

Engagement of Executives. Engage senior executives in accessibility awareness.

Information Sharing. Promote information sharing by all airport stakeholders.

4.2.4 Alignment of Airport-Wide CX Standards/Benchmarks for All Traveler Segments

CX service standards and benchmarks, once developed and implemented, are foundational for performance assessment and action planning, especially given the airport’s complex service delivery chain. Standards must be specific, measurable, and achievable, with specific KPIs to determine progress in meeting or achieving established standards.

The following notable practices are guidelines for developing standards.

Determine Existing Standards. Determine existing standards and compare where the airport is in relation to the “ideal” airport CX. If there are no standards, develop accessibility standards for each service or program in collaboration with other stakeholders, where applicable.

Notable Practices

Implement Airport-Wide Accessibility Standards. Adopt and implement airport-wide accessibility standards that exceed ADA requirements and are aligned with the airport’s CX brand and standards for all services provided to the airport’s customers.

Implement KPIs. Implement KPIs that measure compliance with CX and accessibility standards and develop collaborative action plans to correct deficiencies and enhance services that are in concert with the airport’s brand and established standards.

4.2.5 Integration of CX/CS Departments, Divisions, and Committees with ADA Advisory Committees

The following guidelines are useful for ensuring consistent service delivery strategies and information sharing, effective use of resources, high customer satisfaction, and improved participant satisfaction.

Notable Practices

Policies Requiring Participation by All Stakeholders. Establish policies that require participation of all airport business and service partners in airport-wide CX/CS and ADA committees, councils, and advisory groups.

Compliance Language in Agreements and Contracts. Insert language into appropriate agreements, contracts, leases, permits, RFPs, etc., and the airport’s rules and regulations that prescribe compliance with all service standards and involvement in such committees, councils, and advisory groups, as required.

Performance Assessment of Service Providers. Collaborate with airlines and others to require service providers, such as airline third-party assistive services, to provide their performance metrics, customer comments, and assessment of their services to the airport on a quarterly basis. This can either be contractually stipulated, where appropriate, or collaboratively established as an airport policy via the airport’s service standards and CX performance management program.

4.2.6 Collect Demographics and Data on Travelers with Disabilities and Older Adults

Airports frequently have access to community, state, or federal statistics on the population living within their catchment or service area. However, most of the current survey organizations and airports conducting surveys do not capture information on travelers with disabilities in terms of their disabilities or needs.

The following notable practices can better inform the airport’s traveler segmentation and strategic plan.




Notable Practices




4.2.6.1 Demographic Surveys

Work with industry or individual market research firms to include services provided to travelers with disabilities and older adults in their survey demographics and survey questions.

4.2.6.2 Inclusion of Services for Travelers with Disabilities in Market Research Efforts

Include services provided to travelers with disabilities and older adults in airport proprietary market research efforts, including surveys and focus groups.

Assessment Tools for Strategic Elements	
	<ul style="list-style-type: none"> ○ Comment/feedback tracking—customer feedback website, comment cards, focus groups, and interviews.
	<ul style="list-style-type: none"> ○ Other tools, such as <ul style="list-style-type: none"> • Feedback from the disability and older adult communities and industry surveys (ASQ, Skytrax, J.D. Power ratings); • Meetings with representative organizations of the various traveler segments to see if standards are appropriately set and are being met; and • Feedback and observations from business partners, stakeholders, and airport employees to measure collaboration received by the airport.
	<ul style="list-style-type: none"> ○ Customer satisfaction surveys—to determine the level of awareness of airport accessibility.

Assessment Tools for Strategic Elements	
	○ Employee engagement survey —to determine awareness throughout the airport organization of accessibility standards, level of knowledge about all traveler segments needs, and employee’s role in achieving goals to reach the desired state.
	○ Disability:IN’s DEI.
	○ Accessibility service excellence standards —to review individual and department or division performance appraisals or goal achievements to determine improvements in customer satisfaction.

4.3 Airport-Wide Human Resources Management

Research findings indicate a clear linkage between employee satisfaction at work and customer satisfaction. If employees are not satisfied with their responsibilities, work culture, or working environment, their dissatisfaction is mirrored in their interactions with customers, which results in lower customer satisfaction ratings. Airports that fully embrace the role of employees in providing excellent customer experiences and hire employees with disabilities and older adults are likely to achieve improvements in the customer satisfaction ratings from travelers with disabilities and older adults.

4.3.1 Encourage English Proficiency for Front-Facing Staff

As documented in *ACRP Research Report 231* and confirmed again in this study, travelers with disabilities have expressed a need for staff members interacting with them to communicate clearly in English (Ryan et al. 2021).

Hiring airport staff with English proficiency can greatly benefit this group of travelers. Airports can require English proficiency for their own front-facing staff and those of their contractors. English proficiency for front-facing staff can be included in the airport’s service standards for all airport employees. Classes in English as a second language can also be offered to front-facing airport employees. Training on how to communicate appropriately and effectively with individuals with various disabilities is also essential, as is proficiency in using any assistive communication technology provided by the airport or other stakeholders, such as tablets with video remote interpreting (VRI) software.

Notable Practices

4.3.2 Reward All Staff/Volunteers for Providing Outstanding Assistance to Travelers with Disabilities and Older Adults

Most U.S. airports have employee reward and recognition programs; however, few of them recognize those employees who go out of their way to assist travelers with disabilities or older adults. Including recognition for airport employees, volunteers, airline and business partners, and third-party employees who provide outstanding assistance to travelers with disabilities and older adults as a part of the airport’s CX/CS reward and recognition program has been shown to translate into an enhanced experience for these groups of travelers.

The following notable practices are guidelines for rewarding and recognizing staff and volunteers for providing outstanding assistance to travelers with disabilities and older adults.

Notable Practices

Create an Additional Category. If an airport already has a reward and recognition program in place, another category may be included for providing outstanding assistance to travelers with disabilities and older adults.

Create a Reward and Recognition Program. If an airport does not have a reward and recognition program, it can consider creating a program and including outstanding assistance to travelers with disabilities and older adults.

4.3.3 Ensure that CX Airport Staff and Volunteers Are Easily Identifiable

CX airport staff and volunteers who are wearing easily identifiable uniforms or other paraphernalia are particularly helpful for travelers with disabilities and older adults since these groups are more likely to seek out assistance.

The following guidelines help ensure travelers with disabilities and older adults can easily recognize airport staff and volunteers who are available to assist.

EASILY IDENTIFIABLE VOLUNTEERS AT CALGARY INTERNATIONAL AIRPORT

Volunteers at **Calgary International Airport** wear iconic red vests, white shirts and cowboy hats and direct/assist passengers at the airport

**Notable Practices**

Review CX Personnel Uniforms. Review uniforms of airport CX employees and volunteers to ensure they are easily identifiable by airport travelers.

CX Staff Standards. Provide airport CX staff and volunteer standards that include an easily identifiable uniform, button, or vest for travelers to recognize who is available to assist.

Communicate Information About CX Staff Uniforms and Standards. Include the uniform, button, or vest on the airport website and app, in public relations releases, and at stakeholder meetings to elevate awareness of how to identify airport staff and volunteers.

4.3.4 Commit to Hiring Employees with Disabilities at the Airport

Hiring employees with disabilities diversifies the organization's culture, improves organizational performance (due to lower turnover and absenteeism rates), provides a unique perspective, and often brings innovative thinking.

The following guidelines cover hiring employees with disabilities.

HIRING EMPLOYEES WITH DISABILITIES








Hartsfield Atlanta International Airport hires employees with disabilities who can provide better feedback every day and in real-time, with no delay. The airport has a policy that 15% of the employees on their contracts should be persons with disabilities, including on customer service contracts. The airport also has volunteers with disabilities. This ensures that there is feedback not just on the terminal facilities and security but also the accessibility of public transportation.



Detailed Job Descriptions. Create detailed job descriptions that explain what abilities are needed to perform the required tasks so that potential candidates can decide which are appropriate for them.

Notable Practices

Use of Resources. Make use of readily available resources such as Disability and Business Technical Assistance Centers, Centers for Independent Living, and local branches of national disability organizations to identify target groups and help with outreach.

Assessment Tools for Airport-Wide Human Resources Management	
	○ Comment/feedback tracking —customer feedback website, comment cards, focus groups, surveys, and/or interviews to determine the number of complaints (and compliments) related to language proficiency and other customer service elements.
	○ Internal audits —to review the number of current airport employees with disabilities versus the desired number of employees with disabilities.
	○ Mystery shopping —to measure the level of compliance with airport standards, effectiveness of airport CX and disability training, and customer satisfaction with staff interactions.
	○ Electronic/static rating —located at strategic points where human services are provided.
	○ Customer satisfaction surveys —to gather customer feedback on interactions with airport personnel.
	○ Employee engagement surveys —to measure employee satisfaction.
	○ Reward/recognition programs —to track the number of employees rewarded/recognized for delivering excellent service before and after implementing notable practices.

4.4 Accessibility/Disability Awareness Training

Travelers don't always know who is responsible for a given service, and poor customer service from any employee at an airport may reflect badly on the airport itself. Therefore, it is incumbent upon the airport, airline, and the airport's business partners to ensure that all staff are properly trained on responding appropriately to the needs of the airport's traveler segments and attuned to the nuances of travelers with various types of disabilities and older adults.

Air carriers, both domestic and international, serving the U.S. market have specific disability training requirements under the Air Carrier Access Act. Under ADA, those carriers providing ground transportation have an explicit requirement to provide disability training to frontline employees. However, U.S. airports have only a vague requirement under Section 504 and ADA that their programs and services be accessible to individuals with disabilities.

Airports are increasingly focusing on enhancing CX airport-wide and recognize the need to provide training to airport staff on techniques and best practices to better serve the traveling public; however, airports do not always require or provide disability-specific training to their own staff or volunteers. Both initial and ongoing training is needed for all airport staff so that each individual interfacing with travelers is aware of the various nuances of travelers with disabilities and older adults. This includes training content on how to address unique needs of these traveler segments and how to improve customer experiences for all passengers traveling through the airport. It also includes training for senior-level airport staff to improve their awareness of the needs of travelers with disabilities and older adults.

The following notable practices are for airports regarding accessibility and disability awareness training.

Notable Practices

Standardized Airport-Wide CX/CS Training Including Accessibility Awareness. Provide standardized airport-wide CX/CS training aligned with the airport's CX brand and service standards to all front-facing airport staff, volunteers, airlines, and third-party assistive service

DISABILITY AWARENESS TRAINING

The **Chicago Children's Museum (CCM)** provides disability awareness training. In addition to the required 30-minute Disability Awareness training for new hires, the CCM also requires all frontline staff to participate in a 2-hour long training course twice a year. To conduct the training, CCM brings in outside disability organizations to teach staff about interacting with their members such as The Arc, for visitors with cognitive disabilities, and Shirley Ryan Ability Lab, a local rehabilitation hospital, for visitors with physical disabilities.






providers. This should include accessibility awareness with specific training on recognizing the needs of and interacting with/assisting travelers with disabilities and older adults.

Accessibility Awareness Training for Onboarding. Provide CX/CS training that includes accessibility awareness upon onboarding for employees and volunteers.

Refresher Accessibility Awareness Training. Provide refresher accessibility awareness training as part of the Security Identification Display Area badging process.






Community Outreach. Reach out to the local community to determine if any organizations or universities are already providing accessibility training, and if so, consider working with them to offer the training to airport employees/volunteers and/or business partners.

Inclusion of Travelers with Disabilities in Trainings. Include videos of travelers with specific types of disabilities within in-house training programs so that their perspectives are included when the trainers themselves do not have disabilities.

Assessment Tools for Accessibility/Disability Awareness Training	
	○ Mystery shopping —to measure the level of compliance with airport standards, effectiveness of airport CX and disability training, performance of staff, and customer satisfaction with staff interactions.
	○ Customer satisfaction surveys —to measure the customers’ satisfaction with the service level.
	○ Employee engagement surveys —to evaluate the effectiveness of training programs.

4.5 SLAs/Contracts and Other Methods of Oversight

Airports and airlines use SLAs with subcontractors who provide specific services to and for the airport, such as janitorial service and wheelchair assistance. SLAs in contracts can be used as a tool to ensure a consistent level of excellent service for people with disabilities and older adults. Specifying expected service standards/benchmarks and performance levels in the SLA/contract provides a very effective assessment tool for the level of service that the service provider and the airport jointly agree to consistently strive for. In addition to established service standards, responsibility for management and oversight of these standards must be assigned to ensure accountability. For disability-related services, the ADA/504 Coordinator typically oversees such contracts and must ensure that clauses are included with regard to regulatory compliance so that accessibility requirements are met.

Assessment Tools to Measure Adherence to SLAs and Other Methods of Oversight	
	○ Customer satisfaction surveys —such as website exit surveys and intercept surveys specific to service providers that serve the needs of travelers with disabilities and older adults.
	○ Internal audits/inspections —to review wait times at various journey points.
	○ Mystery shopping —to measure standard wait times.
	○ Reward/recognition programs —to track the number of employees rewarded/recognized for delivering excellent service.
	○ Accessibility service excellence standards —to review individual and/or department/division performance appraisals and/or goal achievements to determine improvements in customer satisfaction.

4.6 Managing Service Gaps

Airlines are mandated by ACAA 14 CFR Part 382 regulations to provide assistance to travelers upon request at the terminal entrance. However, this means that travelers are faced with gaps in service when arriving at alternative arrival points, such as rental car facilities, parking garages, and light rail stops. Airports have a responsibility to ensure customers are accommodated under ADA. Some airports have separate contracts to provide assistance to travelers in these gap areas.

If an airport has a separate contract to cover service gaps, such as travelers arriving at a rental car facility, then travelers should be directed via the airport website and airport signage to call the service provider directly [e.g., Phoenix Sky Harbor International Airport (PHX) or Seattle-Tacoma International Airport (SEA)]. For planning purposes, however, airports need to know which types of disabilities are represented among their travelers and how many people with disabilities are traveling through the airport overall (i.e., those assisted by airlines) as well as by airport contractors. Airports, airlines, and other service providers should work together to identify where these gaps exist, determine who is responsible for addressing them, and agree on the best way to address them.




The following notable practices address gaps in service for people with disabilities and older adults.

Notable Practices

Collaborative Meetings with Business Partners. Hold collaborative meetings among airport personnel, airlines, and third-party service providers to identify service gaps and strategize how to address barriers to assistance.

ADA Committees. Create internal and external ADA committees.

Information Sharing Standards. Create an information sharing standard that requests airlines to provide information on the types of travelers requiring assistance to help the airport plan for these travelers.

Assessment Tools to Measure Service Gaps	
	○ Customer satisfaction surveys —such as website exit surveys specific to service providers that serve the needs of travelers with disabilities and older adults.
	○ Mystery shopping —to identify potential gaps in service.
	○ Usage data —to measure the number of travelers/disability type assisted by airport and airline contractors.

4.7 Collaboration with Communities of Older Adults and Persons with Disabilities

Collaboration with communities of older adults and persons with disabilities is fundamental to the creation of an executive strategy for accessibility. The FAA requires airports and airlines to work with service animal organizations when designing and placing service animal relief areas. Airports are also required to conduct self-evaluations with assistance from disability organizations. The FAA provides a list of appropriate organizations in the advisory circular *AC 150/5360-14A—Access to Airports by Individuals with Disabilities* (FAA 2017). Individuals with disabilities who specialize in ADA issues in state or local government may also be good candidates.

4.7.1 Create Advisory Committees

While there are regulatory requirements for working with these communities, some airports are taking an extra step to include people with disabilities and older adults in planning and

design initiatives on a more consistent basis by creating internal and external accessibility advisory committees. By establishing an advisory committee focused solely on accessibility, each department involved considers the needs of its travelers with disabilities and older adults and governs itself accordingly to meet their needs as much as possible.

The following notable practices describe different types of advisory committees that can be established.

Notable Practices

Internal ADA Committees. Internal ADA committees are usually organized and led by the ADA/504 Coordinator. The committee typically meets on a monthly basis, or more often if required, to discuss any issues or projects that affect accessible facilities or services at the airport. Since the responsibility for accommodating customers with disabilities is shared across numerous stakeholders, all interested parties are invited, including airport departments, airlines, airline service companies, ground transportation providers, concessionaires, and security.

External ADA Committees. External ADA committees allow airports to secure regular input from community members with disabilities. Airport staff from various departments and other stakeholders, including airlines, service companies, and TSA, also attend to give presentations and get input on their initiatives. Some airports—such as Hartfield-Jackson Atlanta International Airport (ATL), Miami International Airport (MIA), and Los Angeles International Airport (LAX)—hold meetings monthly while others, such as Minneapolis-St. Paul International Airport (MSP), meet quarterly.

Community members with disabilities from local chapters of national organizations may participate; possible organizations include the American Council of the Blind, Hearing Loss Association of America, National Federation of the Blind, National Association of the Deaf, MS Foundation, Paralyzed Veterans of America, The Arc, or a local Center for Independent Living.

Disability Advisory Committees. Airports that currently have disability advisory committees have been able to attract at least one airport staff member to be fully active on the board. Having buy-in from upper management increases the group's credibility and is key to the continuation of such committees and follow-through on the recommendations they make. Having a working group or advisory board gives airport planners, architects, and designers a group to consult with on questions of regulatory compliance and inclusive design. At MSP, architects regularly meet with the committee to discuss specific projects and to get feedback from members. Having a community of people who are available at any given time gives airport staff the ability to find answers reliably and quickly.

The committee can also provide firsthand experience on inefficiencies at the airport, as well as give valuable insight into how people with different disabilities interact with the airport. This type of committee empowers airport personnel to use these people as a resource. The airport will hear not only local viewpoints but also national views. In some cases, international viewpoints are addressed.

Advisory committee members may also be able to contribute to disability awareness trainings at the airport, help with community outreach, or participate in emergency exercises (e.g., MSP and LAX). According to *ACRP Synthesis 90: Incorporating ADA and Functional Needs in Emergency Exercises*, “a disability advisory committee can benefit an airport’s emergency exercises, planning and general operations and facility design” (Smith and Haines 2018).

4.7.2 Other Committees and Advisory Groups




The importance of collaboration and cooperation across all stakeholders cannot be over-emphasized; it is critical to bridging the service gaps and creating a successful airport-wide

accessibility strategy. While external and internal advisory groups focus on accessibility on a broader scale, advocates strongly suggest that airports develop more focused advisory groups to ensure that the needs of people with disabilities are considered in more critical plans, specifically for emergency preparedness and planning.

Notable Practices

Emergency Preparedness and Planning. Community advocacy and nonprofit organizations representing people with disabilities should be invited to participate in emergency preparedness and planning groups. Airport employees with disabilities, emergency management staff, and managers and administrators should participate as well. Coordinators of services for people with disabilities and emergency managers from the state, county, and/or city also can be invited to participate. Along with all of these key players, the advisory group plays a vital role in developing an effective emergency communications strategy, conducting the airport needs assessment, evaluating solutions, assisting with exercises, and integrating considerations for people with disabilities into emergency preparedness programs (IEM Inc. 2019).

Gaining Insight from the Disability Community. On a less formal basis, a number of airports engage the community to solicit feedback and gain insight from the people that might benefit most from a given accessible program or service. Following the Port of Seattle’s commitment to becoming the “most accessible airport” in the country, SEA conducted an airport accessibility research project to assess the current state of the airport’s accessibility, identify areas of improvement, and determine recommendations for addressing these areas over timeframes of two, five, and ten years. As part of the assessment, travelers with disabilities from the Seattle-Tacoma area were invited to participate in community outreach meetings where they shared their challenges when traveling through SEA and provided feedback on where the airport could make improvements.

Assessment Tools to Assess Collaboration with Communities of Older Adults and Persons with Disabilities	
	○ Accessibility service excellence standards.
	○ Comment/feedback tracking —feedback from the disability community on effectiveness of programs.
	○ Internal audits —conduct internal audits of programs prior to and after engaging the community to measure the impact.

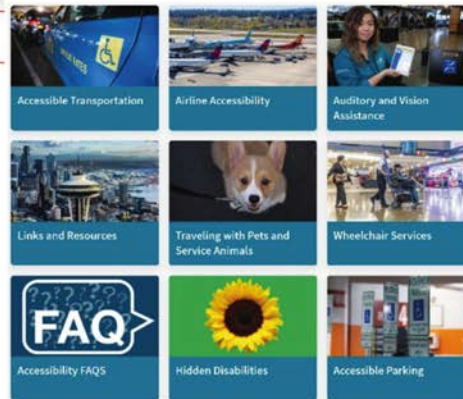
4.8 Mini Case Study

MINI CASE STUDY: SEA ORGANIZATIONAL COMMITMENT TO ACCESSIBILITY

Example of senior leadership commitment to accessibility

Region: U.S. Northwest

Seattle-Tacoma International Airport (SEA) has committed to becoming the most accessible airport in the United States. The airport consistently demonstrates its commitment to accessibility through press releases, frequent discussions of accessibility issues at Commission Meetings and powerful messages on the airport website. The Managing Director of SEA also holds public briefings to announce improvements in accessibility around the airport. Some of the fundamental changes benefitting travelers with disabilities and older adults that have been recently implemented at the airport include:



Source: SEA airport website

Sunflower lanyards: offers the sunflower lanyard to passengers with hidden disabilities such as autism, PTSD, or hearing loss. Passengers may request free sunflower lanyards from a Pathfinder or volunteers in green.

Wheelchair accessible taxis: Taxi and flat-rate vehicle services to and from the airport offer wheelchair accessible vans. Taxis drop off passengers on the departures level, or a location most convenient for the passenger. Passengers with limited mobility, or in a wheelchair, may request curbside pick-up.

Curb appeal: The curbs along the upper and lower drives at SEA for departures and arrivals are updated to meet current code requirements for accessibility.

How may we help? SEA added staff to its airport customer experience and volunteer team to support passengers with different needs. Pathfinders/volunteers dressed in green are equipped with tablets for real-time translation services in multiple languages with a live person, including sign language. Pathfinders and Volunteers have completed an "Excellent Customer Service for Passengers with Disabilities" e-learning, which reviews disability etiquette, preferred language, and SEA-focused accessibility scenarios to ensure SEA is providing optimal customer service for passengers with disabilities. The e-learning complements SEA's Customer Service Standards Manual, which was developed for the benefit of all airport customers and outlines the customer service expectations for all Airport employees and volunteers, regardless of employer. Accessibility customer service expectations were integrated into the standards.

Better accessibility wayfinding: Navigation improvements have been made both in the terminal and on the SEA App. For example, an interactive map on the flySEA App provides turn by turn directions between two points, and high-color contrast wayfinding signage helps with airport navigation for low vision travelers.

Better accessibility amenities: The airport has installed more accessible dining tables and charging stations in the newly opened south end of the Central Terminal. SEA also opened 2 adult changing tables in North Satellite, as well as their first built-in animal relief space within the North Satellite. SEA also opened their first Sensory Room to provide a calming environment for those who may feel overwhelmed or overstimulated at the train station level under the A concourse.



CHAPTER 5

Key Business Partner and Airport Staff Services

Navigating the Chapter

This chapter is divided into main subject areas with notable practices, benchmarks, and assessment tools provided for each subject. A mini case study that illustrates a number of notable practices is included at the end of the chapter.

5.1 Introduction

Key business partner services include the services and staff support provided by airlines, third-party providers, and other suppliers. These services are among the most basic services provided at airports and, as a result, are crucial to all travelers. Support staff services, an important component of key business partner services, provide the human/customer interface that is essential for peace of mind to customers who require additional assistance. As a result, the importance of these services to the traveler grows proportionately greater when basic services fall short of the customer's expectations. For travelers with disabilities and older adults—who are often most dependent on these services for basic support—seamless communication and continual collaboration between the airport, airlines, third-party providers, and other suppliers is even more essential to deliver a seamless CX.

This chapter focuses on those key business partner services that apply directly to travelers with disabilities and older adults needing extra assistance, including

- Assistive services and airport-wide assistive programs (Section 5.2);
- Other third-party services, such as concessions, amenities, educational/museum opportunities, and airport celebratory/customer appreciation events (Section 5.3); and
- Collaboration between the airport and other stakeholders (Section 5.4).

5.2 Assistive Services and Assistive Programs

In U.S. DOT statistics for 2018, airlines reported 36,930 disability-related complaints, a 7.5% increase from 2017. Of all complaints reported, 46% involved failure to provide adequate assistance to travelers using wheelchairs (U.S. DOT 2020).

Assistive services, such as wheelchair assistance and escort services, and the airport staff that support these services are utilized most frequently by travelers with disabilities and older adults requiring extra assistance. In addition to assistive services, airports also provide airport-wide assistive programs that are focused on enhancing the travel experience for travelers who require specialized assistance throughout the airport journey.

The degree to which assistive services and programs delight or disappoint travelers with disabilities, older adults, and those who accompany them, will impact how they will assess the entire airport journey. Monitoring and evaluating these services and programs are critical to adequately determine the customer satisfaction of these two important and growing traveler groups.

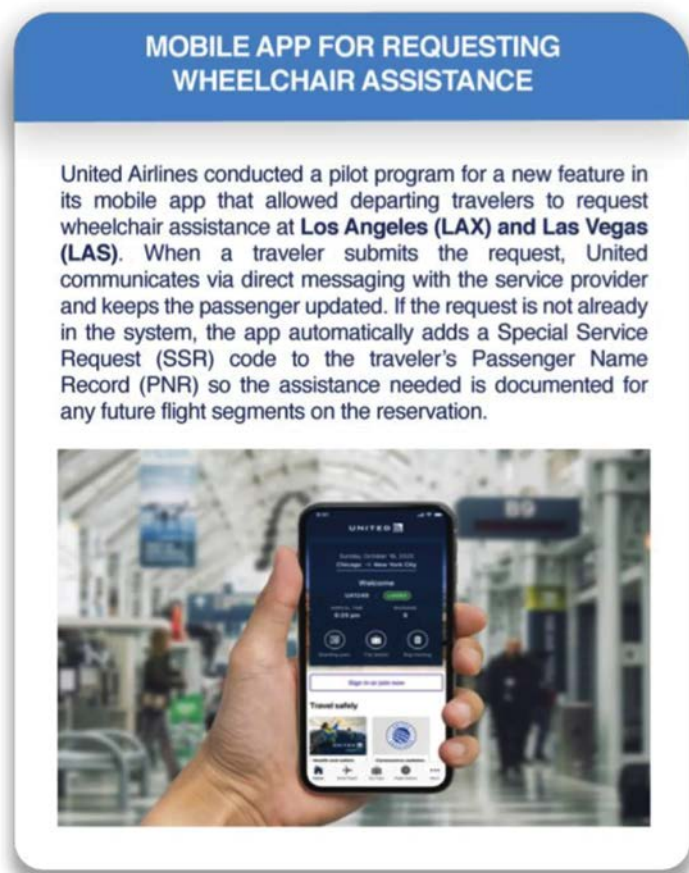
5.2.1 Differentiating Assistive Services Provided by Airlines for Travelers with Different Types of Disabilities

Assistive services provided by airlines are typically a “one-size-fits-all” approach, focused solely on wheelchair assistance for those with reduced mobility rather than tailored to also accommodate those who have other disabilities—such as vision loss, hearing loss, or cognitive disabilities—who may instead need escort assistance. In addition, the ability to borrow a wheelchair for use to and from the gate with assistance from a companion or family member is not common practice at U.S. airports. This preference has come to the fore as a result of the current COVID-19 pandemic and need for social distancing.

The following notable practices describe how airports can help airlines provide exceptional services to travelers with disabilities and older adults and differentiate assistive services for travelers with different types of disabilities.

Different Types of Wheelchairs. Require provision of wheelchairs in a variety of types and sizes that travelers may borrow; hire a contractor to manage their maintenance and relocation where needed; and advertise their availability online and on signage at the airport.

Notable Practices



Training on Different Needs of Travelers with Disabilities. Train airport staff, business partner staff, and volunteers on how to identify and address the needs of travelers with different

disabilities requiring extra assistance and how to provide appropriate assistance to people in need of wheelchair assistance versus a walking escort. Accessibility training can be standalone or incorporated into existing training programs, including

- Inclusion of ADA training in badging,
- Standalone disability awareness training,
- Disability awareness training within customer service training programs,
- Section 504 awareness training that promotes protection of qualified individuals from discrimination based on their disability, and
- Workshops focused on accommodating travelers with disabilities.

Training Resources Developed by an Appropriate Federal Agency. Examples of such agencies include the FAA (with guidance from ADA), U.S. DOT (with guidance from ACAA), or the U.S. Access Board (using Accessible Design Guidelines).

Training on Handling of Devices. Require staff training on how to properly handle devices such as personal wheelchairs, walking canes, and so on.

Wait Time Standards. Establish acceptable wait time standards (such as 15 minutes after travelers notify the airline that they have arrived) with penalties for not meeting the standards.

Collaboration on Information Sharing. Ensure that airports and airlines collaborate regarding the best way to share information about travelers requesting assistance.

KPIs for Airlines and Service Providers. Set KPIs in conjunction with airlines and their service companies, and require them to regularly provide data to assess their performance.

5.2.2 Provide Assistive Services That Are Needed Between the Point of Arrival and the Terminal Entrance

Research has consistently identified finding assistance upon arrival on airport property (e.g., curbside, parking garage/lot, ground transportation mode, and other facilities remote from the main terminal) as one of the most common challenges for travelers with disabilities and older adults requiring extra assistance. Points at which travelers can receive assistance vary from airport to airport, which creates a service gap for departing travelers. There is also a lack of information on who travelers should approach first—for example, whether they should reach out to the check-in or special service desk.

The following notable practices are guidelines on how airports can provide and monitor important assistive services between the point of arrival and the terminal entrance.

Notable Practices

Means for Requesting Timely Assistance. Provide convenient means of requesting timely assistance at point of arrival (and to point of departure).

- Provide a contact number with voice and text messaging capabilities for the airlines and service providers on the airport website, airport app, and at designated airport entry points.
- Designate a staff person to review and respond to travelers' comments left on the website, app, and/or other feedback channels.
- Provide an accessible kiosk, call button, or designated 24/7 courtesy phone number that travelers can use to notify the airline/service company that they have arrived. For example, London Heathrow (LHR) has a kiosk to request assistance at all arrival points, including accessible parking, light rail, and so on.



- The SFO International Terminal has conveniently located assistance phones, and finding assistance is easier because all carriers use the same provider. The provider is stationed at clearly marked, designated locations.
- Contract a service provider to fill those gaps for arrival points that airlines are not required to service under ACAA. Per the FAA, this is a required accommodation under ADA/Section 540.

Free, Accessible Transportation. Provide a free, accessible mode of transport (e.g., accessible shuttle, electric cart, or wheelchair service) between terminals and between remote areas (such as parking garages or rental car lots) and the terminal.

Covering Gaps in Services. Make provisions for the airports to manage service to cover gaps themselves. For example, San Francisco International Airport (SFO) covers the cost of the service between the rental car facility and check-in for departing passengers and between baggage claim and the consolidated rental car center for arriving passengers. Portland International Airport (PDX) requires airlines to cover service provision between arrival points and the terminal. Under the new Canadian Accessible Transportation for Persons with Disabilities Regulations (ATPDR), YVR provides advance reservation for curbside service, which can be arranged by calling or emailing the customer call center and specifying the arrival time and location.

Supplemental Assistance. Use services such as Travelers Aid and airport volunteers to provide or supplement assistance to travelers with disabilities and older adults. Travelers Aid member agencies operate information booths at 17 airports nationwide, with services that vary from airport to airport. At some locations, Travelers Aid is able to stay with passengers until they board, thus providing the continual oversight needed by some individuals with cognitive or psychological disabilities.

Collaboration on Information Sharing. Ensure that airports, airlines, and third-party providers collaborate regarding the best way to share information about travelers requesting assistance. This may include providing the appropriate contact phone numbers on the airport website for travelers to request assistance on arrival at the airport.

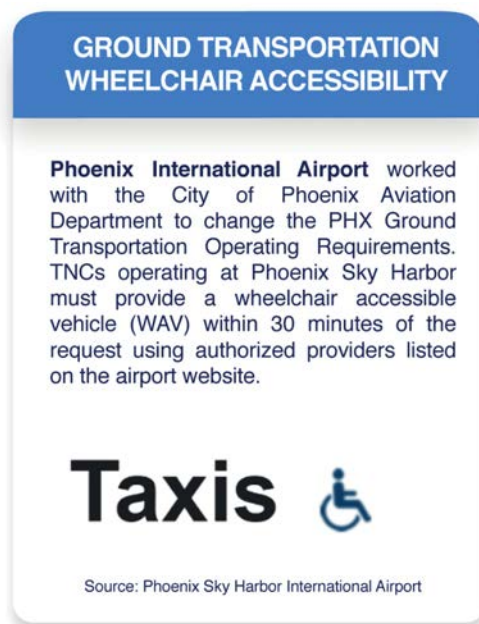
5.2.3 Improving Predictability of Wait Times at Various Points on the Journey

Travelers are often left waiting for assistance with little information provided about how long the wait will be. Travelers have also expressed that they often feel like they were forgotten while waiting, which produces great anxiety. Furthermore, once airside, there is often no information provided on how to contact the service company if additional assistance is needed at any point.

The following notable practices describe how airports can inform passengers of wait times for assistive services.

Notable Practices

Training on Providing Wait Time Information. Train assistants to let travelers know how long they will be waiting and how to request assistance in the meantime if they require it.



Contact Phone Number. Provide a contact phone number with voice and text messaging capabilities for travelers who are unable to move about independently and need to request immediate assistance.

Customer-Facing Apps. Provide a customer-facing app similar to those used by transportation network companies (TNCs) which shows the expected arrival time of the assigned assistant and offers a means to communicate as needed.

Self-Service Wheelchairs or Scooters. Provide self-service wheelchairs or scooters in airports to offer more flexibility and independence for travelers. Autonomous wheelchairs are currently being trialed at airports around the world as a promising solution for travelers who require mobility assistance.

5.2.4 Airport-Wide Assistive Programs That Help Ease Anxiety and Bring Comfort to Travelers

Airport-wide assistive programs, such as service animal programs, therapy dog programs, and hidden disability lanyard programs, are very effective at easing traveler anxiety and the

airport journey itself. Fortunately, airport-wide assistive programs continue to be introduced at U.S. airports—particularly at those airports that have made a strategic commitment to accessibility and addressing the needs of travelers with disabilities and older adults—and they have been well-received. However, since airport-wide assistive programs are not available at all airports, there are often unpredictable expectations and an inconsistent CX for this group of travelers.








The following notable practices describe popular airport-wide assistive programs.

Notable Practices

Service Animal Programs. These programs help service animals prepare for air travel. Service animal training organizations have arrangements with airports for orientation visits as part of the individual training for service animals. Programs such as this are a win-win-win for the airport, the travelers, and their service animals.

Therapy Dog Programs. Very popular in North American airports, therapy dog programs will likely become even more common in the future due to higher levels of anxiety among travelers as a result of COVID-19. Dogs are the predominant animals used in therapy programs; however, some airports have used cats, miniature horses, and even a pig. Despite the smiles and calming effects that programs like this bring to the airport experience, airports may want to consider whether they are likely to impact customers with allergies before they introduce different types of animals into their programs.

Hidden Disability Lanyards. These lanyards have gained popularity around the world after the scheme was first introduced by London Gatwick International Airport (LGW) in 2016. The program provides a sunflower-patterned lanyard to any traveler on request as a means to self-identify as having a disability and to help airport personnel identify travelers who may need additional assistance. This strategy minimizes the need for travelers to approach staff and disclose that they have a disability. Following LGW’s launch, many airports in the United Kingdom have followed its lead. SEA was the first U.S. airport to begin a lanyard pilot program in 2019. Now, nearly 100 airports around the world have adopted the lanyard for their visitors (The Hidden Disabilities Sunflower, 2021).

Assessment Tools to Measure Impact of Assistive Services and Programs	
	○ Comment/feedback tracking —customer feedback via website, social media, comment cards, observation.
	○ Focus groups and intercept interviews —to gather in-depth customer feedback.
	○ Other tools —such as a time and motion study to evaluate the efficiency of assistive services and programs.
	○ Usage data —on use of assistive services and programs.
	○ Customer satisfaction surveys —such as end-of-use surveys.
	○ Mystery shopping —to measure standard wait times.
	○ Internal audits and inspections —to monitor the number and effectiveness of collaborative meetings and effectiveness of decision-making.

5.3 Other Third-Party Services

Concessions are an important, expected, and needed component of the CX for the majority of travelers, with more than half of travelers using food, beverage, and retail concessions. The longer the dwell time and the more highly satisfied the customer, the more travelers tend to use concessions.

Beyond the basic requirement for concessions, airport celebratory events and other entertainment options introduce elements of surprise and delight to the typical airport experience. Over time, these events have also become a welcome, and expected, aspect of a traveler's airport experience. These events elevate the customer's mood and enhance the ambiance of the entire airport. When combined with an excellent concessions program, they positively contribute to the airport's non-aeronautical revenue potential. Those airports that are consistently well-rated by their customers as CX leaders engineer all airport customer experiences to consider and include—to the extent feasible—the needs of all customers, including travelers with disabilities and older adults, so all can benefit from and enjoy them.

5.3.1 Concessions, Amenities, and Educational/Museum Opportunities

Concessions, amenities, educational/museum opportunities, and airport celebratory/customer appreciation events need to be accessible to travelers who use wheelchairs or have hearing or visual disabilities. The challenges caused by facility and digital inaccessibility combined with limited independence and multiple assistive services gaps hamper, or even preclude, people with disabilities and older adults from enjoying special experiences and amenities. For these reasons, and others highlighted in this Guide, travelers with disabilities and older adults are less satisfied and contribute proportionately less to the airport's non-aeronautical revenue potential than other customers do. It cannot be stressed enough that each airport can and should address these issues for the good of the airport and its customers alike.

The following notable practices describe other services.

Notable Practices

Accessibility Guidelines for Concessions and Third-Party Services. Develop detailed guidelines, such as design guidelines for concessions and other third-party services, to ensure full wheelchair accessibility for paths of travel, seating, tables, counters, and so on.

Virtual Assistants or Robots. Consider the use of virtual assistants and robots (see Figure 18) to ensure that travelers are provided with the detailed information required to locate important services, such as third-party services, that static signage may be unable or less able to provide. Virtual assistants can provide an interactive component, such as a touchscreen, to serve as a helpdesk and provide multiple distinct messages, including wayfinding directions, to users and read menus aloud. The assistant can also be multilingual, with the ability to communicate via spoken languages or sign languages.

Large-Print Material for Concessionaires and Other Services. Require concessionaires and other third-party services to have large-print brochures, flyers, menus, and other appropriate collateral material.

Accessible Websites for Concessionaires. Encourage concessions to have accessible websites, especially online menus for food concessions.

Accessibility Features for Services. Ensure that accessibility features (VoiceOver/TalkBack, screen magnifier, adjustable font, etc.) are enabled on customer service tablets at restaurants and other third-party services, as appropriate.



Figure 18. SEA’s robot assistant, named Tracy.

Staff Assistance and Self-Service Technology from Concessionaires. Require concessions to offer staff assistance as well as self-service technology so that customers, including older travelers and those with disabilities, can choose how they want to order and pay.

Gate Delivery/Pickup Options. Explore the feasibility of providing gate delivery/pickup services such as AtYourGate and Servy (Grab) as these also benefit travelers with disabilities of all types.

Assessment Tools to Assess Impact of Other Third-Party Service Providers	
	<ul style="list-style-type: none"> ○ Comment/feedback tracking—customer feedback via website, social media, comment cards, observation.
	<ul style="list-style-type: none"> ○ Internal audits—to review adherence to accessibility standards by third-party services.

5.4 Collaboration Between the Airport and Other Stakeholders

Collaboration among all stakeholders is key to providing a quality travel experience. Georg Baust, senior consultant at Lufthansa, discussed the importance of all stakeholders understanding their role in the airport ecosystem as it relates to upholding service standards. Regardless of who is responsible for each part of the travel journey, all travelers care about is getting to their destination quickly and conveniently. If each stakeholder maintains the agreed level of service, thus providing travelers with the ideal travel experience, everyone wins (Baust 2017).

It has been clear for many years that airports, airlines, service providers, and the entire airport community must become more collaborative to achieve common goals and objectives. This is especially important outside Europe; in Europe, responsibility for assistance services lies with the airlines and not the airport. As data on the numbers of travelers with disabilities assisted and the types of disabilities are seldom shared by air carriers, airports lack information critical not just to facility planning but also to day-to-day operations. Now that airport executives are putting a greater emphasis on CX and satisfaction, they are also expressing growing frustration over how little control they have over the quality of service for this large and increasing segment of travelers. Complaints about poor service, long wait times, and poor communication by

assistance staff reflect badly on airport reputations even though their facilities may be stellar. The other side of the coin is airline and service companies experiencing frustration with airport infrastructure that makes service delivery more difficult; one major pinch point at older airports is insufficient elevator capacity.

The following notable practices were shared by a number of airports that are finding a way forward through collaboration, across their own departments as well as campus-wide.

Notable Practices

Regular Meetings with Stakeholders. Set up regular meetings with stakeholders where concerns, performance management results, and solutions/best practices can be shared.

- **Airport Customer Service Council.** As reported in *ACRP Report 157: Improving the Airport Customer Experience*, one technique that some leading airports successfully use to nurture buy-in and collaboration is an airport customer service council, which can provide a regular forum for participants to identify, develop, and implement creative approaches to improve airport service delivery, especially those approaches that cut across organizational or functional lines (Boudreau et al. 2016). Membership would typically include the airport operator; airlines; terminal operators; service contractors; concessionaires; and governmental agencies, including security and customs and immigration. Airport customer service councils foster an environment of cooperation and accountability, facilitate the implementation of customer service improvement programs, and provide for the exchange of best practices among the members of the airport community. Accessibility would be one of the issues addressed at customer service council meetings, as are all other issues related to airport CX excellence.
- **Set Up Working Groups.** Alternatively, or in addition to airport customer service councils, airports can set up working groups specifically to address accessibility issues. YVR now has a working group set up to work with airlines on how to make their curbside assistance a seamless experience. The group meets regularly with airlines on all topics, including accessibility, as well as with all business partners. In addition, there has been good collaboration through existing forums on anything involving CX and accessibility.



Standardized SLAs. Create standardized SLAs in collaboration with airlines, as they also face reputational shaming as well as governmental penalties if subcontractor services are inadequate.

Projections from Airlines on the Number of Customers Using Wheelchairs. If airlines are not willing to share data on assisted passengers, have them provide the airport with daily projections on the number of customers using wheelchairs and then provide final numbers to TSA, which can pass that information to the airport.

Information on Accessibility. Share information on accessibility issues through general manager “bulletins” and hold station or terminal manager meetings in which the airport reiterates any new policies. ADA coordinators should be regular attendees and speakers at such meetings.

Inclusion of Stakeholders in Disability Advisory Board Meetings. Include stakeholders in external disability advisory board meetings. At MSP, for example, concessionaires, airlines, and TSA are invited to attend these meetings, along with all airport departments, including CX, architects/planners, and ground transportation.

Less Formal Communication at Smaller Airports. At smaller airports, regular but less formal communication can be quite effective. At YWG, which has strong relationships with its business partners in the airport community as well as with government agencies, the airport meets weekly with the airlines and biweekly with border protection, security, and policing agencies. Any complaints that come in with regard to an airline are documented formally and then shared with the station manager via a phone call and in writing.

Assessment Tools to Evaluate Collaboration Between the Airport and Other Stakeholders	
	<ul style="list-style-type: none"> ○ Shadowing—also called “journey mapping” and “lived experience,” can help find gaps in customer service that can then be addressed through collaboration with other airport stakeholders.
	<ul style="list-style-type: none"> ○ Internal audits and inspections—to monitor the number and effectiveness of collaborative meetings and effectiveness of decision-making.

5.5 Mini Case Study

MINI CASE STUDY: LONDON STANSTED AIRPORT – WHEELLATOR AND BOSTON LOGAN INTERNATIONAL AIRPORT’S VIRTUAL ASSISTANT

Example of key business partner services

Region: United Kingdom/East Coast USA

At the London Stansted Airport, OmniServ is partnering with Wheelator to help passengers with reduced mobility “reclaim mobility for themselves” (OmniServ 2019). The Wheelator is essentially two mobility devices in one, combining a wheeled walker/walking frame with a lightweight wheelchair. Travelers have the option of walking with support from the rollator-like device then, when necessary, converting the device into a full wheelchair. The device can also be pushed by a travel companion or the user can move themselves.



Wheelator at London Stansted Airport

Example of technology that can enhance the experience for travelers with disabilities/older adults



Virtual Assistant at Boston Logan International

At Boston Logan International Airport (BOS), the Virtual Assistant—dressed as a Mass Port customer service agent—delivers TSA security information in English and Spanish to more than 6,000 travelers a day. The Tensator Virtual Assistant uses imagery and audio messages to relay information and instructions to nearby individuals. Instead of posting a prerecorded video on a display screen, the Tensator puts the video on a flat, standing surface that resembles a human and, as a result, appears to be a person giving directions to anyone in proximity, detected via a sensor in the unit. The effectiveness of messaging is much higher, due in part to the novelty of the device.

The Tensator Virtual Assistant has an interactive touch screen that can serve as a help desk and provide up to 11 distinct messages, including wayfinding directions to users. The assistant is also multilingual, with the capability of using any prerecorded language. Verbally relayed information is easier to understand for travelers with cognitive disabilities and vision loss compared to posted signs with the same information. At BOS, this service speeds the screening process by getting travelers ready and frees up TSA agents to focus on screening. After piloting the Tensator Virtual Assistant in Terminal E, BOS also deployed them in Terminals A, B, and C.



CHAPTER 6

Effective Communication and Navigation

Navigating the Chapter

This chapter is divided into main subject areas with notable practices, benchmarks, and assessment tools provided for each subject. A mini case study that illustrates a number of notable practices is included at the end of the chapter.

6.1 Introduction

Preparing for a trip can be a stressful experience. This is especially true for travelers with disabilities and older adults, who often experience anxiety before travel because so many pieces have to come together to create a seamless airport journey. These travelers may also fly less frequently and therefore be less aware of the facilities and services available to them. Therefore, communication from the airport is extremely important for planning accessible transportation to and from the airport as well as for determining how their specific needs can be met on arrival from ground transportation and in the terminal.

To ensure that the air travel experience for individuals with disabilities and older adults is seamless, airports need to coordinate efforts across departments while also working closely with all other stakeholders who interact with and serve these customers:

- Ground transportation providers (public and private entities as well as airport subcontractors),
- Airlines,
- Service companies (airline and/or airport subcontractors),
- Governmental or private security agencies, and
- Concessionaires.

In all collaboration and communication efforts, input from the disability and older adult communities is fundamental to achieving the most equitable and inclusive outcomes. This is especially critical in irregular operations (IROPS) and emergencies, when inadequate communication and preparation can endanger the health and safety of these more vulnerable travelers.

This chapter focuses on airport communication with the traveling public and how to improve wayfinding and navigation at the airport, including

- Digital accessibility, including website and mobile application accessibility as well as enhancing navigational ability (Section 6.2);
- Pre-trip communication and information (Section 6.3);
- On-site customer communication and information (Section 6.4);
- Wayfinding (Section 6.5); and
- Emergency planning and IROPS (Section 6.6).

6.2 Digital Accessibility

6.2.1 Web Accessibility

While there currently is no federal standard in the United States for airport website accessibility, the FAA has advised airports that they must “take appropriate steps to ensure that

their communications with individuals with disabilities are as effective as communications with other individuals, beneficiaries, and members of the public” (FAA 2017).

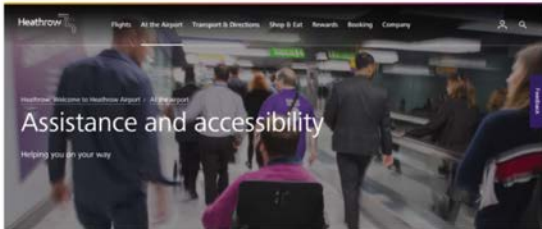
The current minimum standard for airline websites under ACAA regulations is Web Content Accessibility Guidelines (WCAG) 2.0 AA (U.S. DOT 2011). A newer set of standards released in 2018, WCAG 2.1, adds guidelines to WCAG 2.0 to improve accessibility of mobile websites and improve accessibility for people with cognitive disabilities. Many people with disabilities use only mobile devices, which play a critical role during travel. Therefore, current WCAG recommendations should be followed when designing or updating websites, along with various digital technologies, since these recommendations continue to improve over time.

WEBSITE ACCESSIBILITY

The LHR website does a superior job in terms of both accessibility and content for travelers with disabilities and older adults. Included at the bottom of the site is an “Accessibility Statement” that identifies the accessibility standard as WCAG 2.0 with a link to the W3C website. It also describes the site’s navigation features.

The Accessibility and Assistance Page is located one click from the Homepage and is very comprehensive. One important topic it addresses is how to get help on arrival and while in the terminals. In lieu of a social story, LHR offers a series of “Airport Assistance Guides,” written in plain language, that describe and show step by step what “Arriving” and “Departing” passengers can expect to experience. There is also an “Assistance at Heathrow” video that shows the airport service provider assisting individuals with a range of disabilities and offers travelers with hearing loss a choice of subtitles, International Sign Language, or both.

Included on the LHR website is a “Passenger Assistance Survey” which elicits feedback on the airport’s subcontracted assistance services as well as “PRM Service Quality Reports” detailing the number of passengers assisted and the timeliness of service.



Testing of website usability by persons with disabilities, a requirement for airline websites under ACAA, is also a critical step in ensuring that the resulting product actually functions as intended. It is also important to provide training for all personnel who create content for the airport website and to solicit user feedback about the website.

Notable Practices

The following notable practices describe how to improve website accessibility.

Use of Current WCAG Standards. To ensure that all user needs are addressed, use current WCAG standards for web accessibility on mobile devices as well as desktop and laptop computers. Since airport websites are frequently used during travel, it is important that they work well for everyone, even on smaller screens.

Tests Using Individuals with Disabilities. In addition to using automated accessibility website checkers, conduct tests using individuals with a variety of physical, sensory, and cognitive disabilities to ensure user acceptance. A good source for hiring reputable specialists in website development and testing is the International Association of Accessibility Professionals.

Training on Web Accessibility. Provide training on the basics of web accessibility to anyone developing website content at the airport, and assign someone with more advanced knowledge to check content for accessibility before posting. This will help maintain the website's accessibility over time.

Website Accessibility Statements. Provide a website accessibility statement at the bottom of the home page, with a link to report any problems.

End-of-Use Surveys. Include an end-of-use survey to ensure that the website is meeting the needs of all travelers.

6.2.2 Mobile Application Accessibility

Like websites, mobile apps that serve the general public should also be designed to meet the needs of users with disabilities of all types. While there are no separate guidelines for mobile accessibility, they are covered to some degree in existing W3C WAI accessibility standards, particularly the latest version, WCAG 2.1. There is also additional guidance on the World Wide Web Consortium (W3C) website, including “Mobile Accessibility: How WCAG 2.0 and Other W3C/WAI Guidelines Apply to Mobile” (World Wide Web Consortium 2015).

ACRP Research Report 177 provides mobile application developers with a set of principles and checklists to improve utility and usability for all travelers (Harding et al. 2017). That research project found that “while several airport mobile applications provide a wealth of information and usability for general users, few have been designed with the purpose of also supporting users with disabilities” (Harding et al. 2017).

Apps designed to facilitate an enhanced experience for travelers with disabilities and older adults include

- **Apps for Blind/Low Vision Travelers.** To date, there is still no airport or airline app designed for the general public that works equally well for individuals who are blind, at least in terms of navigation. Instead, Aira—which uses remote assistants and video from the traveler's smartphone to direct travelers—is now helping to bridge that gap. Pittsburgh International Airport (PIT) also provides a dedicated app for travelers with vision loss called NavCog, developed by Carnegie Mellon University, which uses beacons for geolocation.
- **Apps for Travelers with Cognitive and Developmental Disabilities.** A number of airports and airlines now offer specialized apps for travelers with cognitive and developmental disabilities, including autism. These provide social stories and videos to familiarize individuals with the airport environment and processes and may be used both pre-trip and at the airport.

- **Apps that Take into Consideration Various Disabilities.** The United Airlines app, redesigned in 2020 by Locus Labs, includes a number of accessibility improvements, such as increased color contrast, more space between graphics, and reorganized page flows that integrate better with screen reader technologies. Airports may incorporate some of these improvements in their mobile apps as well.

The following notable practices describe how to make mobile apps accessible.

WCAG Standards. To ensure that all user needs are addressed, meet current WCAG standards, as applicable.

Notable Practices

App Development Guidelines. Follow guidelines on app development in *ACRP Research Report 177*.

Android and iOS Compatibility. Design applications to work on both Android and iOS devices.

Developers Specializing in Accessibility. Work with developers specializing in accessibility.





User Testing. Conduct utility and usability testing to ensure that the needs of all user groups are met.

6.2.3 Enhance Wayfinding to Increase Confidence in Navigational Ability

The ability to navigate independently from an arrival point to the gate is a common preference among travelers of all types. However, because of the complexity of the airport environment, travelers with disabilities and older adults are faced with navigational challenges that basic wayfinding approaches don't always address. Travelers concerned about navigating the airport may end up requesting wheelchair assistance simply to avoid the stress of finding their way on their own.

Information Provided in Different Formats. *ACRP Research Report 177* introduces wayfinding as “communicating information that helps customers find their way” (Harding et al. 2017). Ideally, information should be provided to travelers in three formats: visual (signage, architecture); verbal (customer assistance, text maps); and virtual (auditory systems, dynamic wayfinding), also called the three “Vs” of communication. Using the three Vs ensures that the needs of people with cognitive, sensory, and mobility disabilities are considered (Harding et al. 2017).

Notable Practices

Assessment Tools to Assess Digital Accessibility	
	<ul style="list-style-type: none"> ○ Comment/feedback tracking—customer feedback via website, social media, comment cards, observation.
	<ul style="list-style-type: none"> ○ Usage data—track usage of mobile apps.
	<ul style="list-style-type: none"> ○ Feedback from apps and smart solutions—to isolate data on specific traveler segments, such as blind/low vision travelers. ○ User testing—by people with a variety of disabilities.
	<ul style="list-style-type: none"> ○ Customer satisfaction surveys—such as end-of-use surveys.

BA BASIC ASSISTANCE TRIAL

To better understand the level of assistance travelers' needs, British Airways conducted the BA Basic Assistance Trial at London Heathrow in April 2019 (British Airways, 2019). This "proof of concept" trial targeted all pre-booked WCHR (wheelchair ramp)/WCHS (wheelchair steps) passengers on flights from Hyderabad, Bangalore, Dubai, Lagos, Larnaca and Accra. Passengers were offered a choice of guidance in their local language, group movement to their final destination (to ground transport or a connecting gate), or full wheelchair assistance. Those from Lagos also had the option of a porter service for hand baggage.

The reasons travelers provided for requesting assistance were having a disability, an inability to walk long distances, needing help with hand luggage, and not knowing their way around the airport. The trial found that 20% of these travelers requested assistance solely to receive help wayfinding and/or carrying luggage. Additional efforts made to improve wayfinding throughout the airport can help travelers feel more confident in their navigational abilities and as a result, lessen the need for assistance from service providers.



6.3 Pre-trip Communication and Information

A majority of travelers with disabilities start planning their trip the moment they decide they are traveling (Ryan et al. 2021; Van Horn et al. 2020). Thus, access to information is critical. In addition to checking content on the airport website, these travelers may

- check mobile applications (i.e., airport, airline, and third-party);
- reach out through interactive communication (i.e., customer service/call centers, live chat, social media);
- arrange pre-booked services; and
- sign up for familiarization programs.

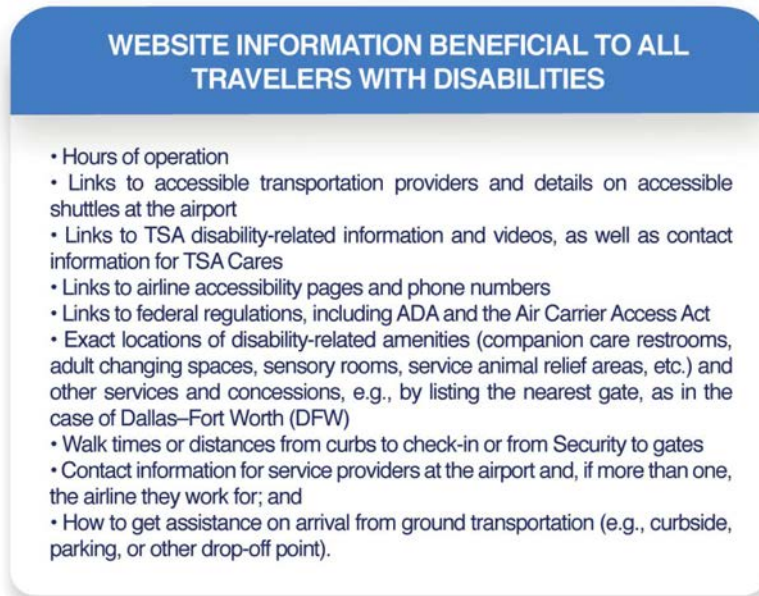
6.3.1 Easily Accessible Pre-trip Information

In addition to receiving the standard website content that benefits all members of the traveling public, individuals with disabilities need to be assured that their specific needs can be met while traveling to, from, and at the various airports they use during their journey. The more detailed and specific the available information is, the better.

The following notable practices cover pre-trip information.

Notable Practices

Easily Accessible Disability-Related Content. Making it easy to find disability-related content is critical as more effort is required by many individuals with disabilities to navigate the website. Provide disability-related information on a single webpage that is one click away from the home webpage. Posting an international symbol of accessibility pictogram with a link to the accessibility page on the webpage header, as done by LAX and ATL, puts this important topic no more than one click away from every other webpage.



Organization of Content by Disability Type. Organize accessibility content by disability type, as done by SEA and LHR, to enable users to zero in on the topics important to them.

Plain, Understandable Language. Use plain language to accommodate customers with cognitive disabilities and limited English proficiency. For basic tips, see “Five Steps to Plain Language” (Center for Plain Language n.d.).

Foreign Language Options. Provide a foreign language option on the website for non-English speakers to select an alternative language. This also helps U.S. airports meet their Title VI Limited English Proficiency obligations under the Civil Rights Act of 1964.

Information for Travelers with Hearing Loss. For travelers with hearing loss, include information on how to communicate by text or email as well as teletypewriter (TTY) and video relay. A number of airports, including MSP and Denver International Airport (DEN), now offer live chat with customer service representatives. In addition to captioning any videos and virtual tours, the website should provide details on any assistive technologies at the airport (hearing loops, VRI, public video phones, visual paging, text telephones, etc.).

Information for Travelers with Vision Loss. For travelers with vision loss, include a text map describing the airport’s overall layout, location of airline check-in counters, security checkpoints, concourses, and so on to help orient these individuals before the day of travel

(Harding et al. 2017). At Cincinnati/Northern Kentucky International Airport (CVG), captions from the terminal video tours can be accessed as a separate document that functions as a text map.

Apps and Content for Travelers with Cognitive and Development Disabilities. For travelers with cognitive or developmental disabilities, provide social stories or apps to prepare these travelers for the airport experience, as well as for use at the airport. Promoting lanyard programs, for self-identification by individuals with hidden disabilities, and familiarization programs is also important.

6.3.2 Pre-booking Services

The following notable practices cover pre-booking services.

Notable Practices

Travelers with disabilities and older adults also benefit from being able to pre-book services such as parking, which should include accessible parking spaces as well as valet parking. In Canada, travelers may now book curbside assistance from airports under the new accessible transportation regulations. This is also available at the Haneda International Terminal. At CVG, a new paid assistance service, SkySquad, may be pre-booked to help with navigation and luggage from curb to gate and back. Several airports are also trialing pre-booked appointments for security clearance. One may also preorder food through apps like Servy, Grab, and AtYourGate.





6.3.3 Use of Social Media for Communication and Feedback

The following notable practices cover the use of social media for communication and feedback.

Notable Practices

While there is limited literature on how airports use social media to support or interact with passengers with disabilities, many individuals with disabilities actively use social media. These individuals may appreciate the easy, direct communication offered by Facebook and Twitter, both pre-trip and while traveling. In addition to communicating with customers, airports also use social media to keep travelers abreast of ongoing airport project changes and status updates that may affect their travel routines on the way to or at the airport, as well as to promote new facilities and services. A number of airports, including PIT and SFO, have their own YouTube channels for promotional purposes.

Airports are also using social media to mine customer feedback, positive and negative, including comments from travelers with disabilities. Several types of software are currently being used to track and manage this process.

Assessment Tools to Assess Pre-trip Communication and Information	
	<ul style="list-style-type: none"> ○ Comment/feedback tracking—customer feedback via website, social media, comment cards, observation.
	<ul style="list-style-type: none"> ○ Usage data—of website, airport apps, pre-booking services, etc.
	<ul style="list-style-type: none"> ○ Customer satisfaction surveys—such as end-of-use surveys.
	<ul style="list-style-type: none"> ○ Feedback from apps and smart solutions—such as accessibility testing software. ○ User testing—by people with a variety of disabilities.

6.4 On-Site Customer Communication and Information

All airport communication strategies should include verbal, visual, and virtual means of communication to reach all user groups. To ensure that a strategy is effective, each plan should also use a variety of means to solicit feedback from the traveling public, including people with disabilities and older adults.

One of the biggest challenges for travelers needing assistance is knowing whom to contact and how to contact them. Chapter 5 discusses notable practices for providing a means to request assistance on arrival at the airport, including installing help phones, designating a specific arrival point to receive assistance, and stationing personnel near arrival points. However, as airlines are responsible for the contract with service providers, these approaches pose a challenge because most airports have multiple providers assisting travelers. Therefore, requests need to be dispatched to the appropriate provider.

6.4.1 Develop a Focused Accessibility Communication Strategy

Over time, the means of communication used by airports to assist the public and promote their offerings have expanded to include many channels of communications that will suit the different needs of a diverse customer base. These communication strategies typically include the following:

- Airport website;
- Airport app;
- Social media;
- Public relations notices and campaigns;
- Scheduled virtual or “live” meetings;
- Newsletters and/or email;
- Print brochures, downloadable and available at the airport;
- Outreach via community agencies and organizations representing segments of travelers;
- Face-to-face interaction or virtual interaction, including live chat;
- Telephone or mobile phone access;
- Static and digital signage;
- SMS messaging;
- Information iPads provided by volunteers/staff at airports; and
- Virtual assistants and/or robots.

Differentiated Communication Based on the Type of Disability. Communication needs among travelers with disabilities and older adults vary depending on the type of disability. Therefore, it is important to develop a focused CX/CS accessibility communication strategy targeting this group of travelers to ensure that everyone is getting the content they need in the medium or format most accessible to them, both pre-trip and at the airport. A growing number of both travelers with disabilities and older adults do use digital technologies and mobile devices, but print media, face-to-face interaction, and call centers remain important for these customers. Providing information both verbally and visually throughout the airport terminal, on airport shuttles, and on people movers wherever possible is effective at reaching most travelers. On shuttles at Orlando International Airport (MCO), for example, information on baggage claim is provided verbally and on an LED readout.

Notable Practices

6.4.2 Improve Access to Airport Staff/Volunteers

In addition to having assistance moving through the terminal, travelers also benefit from having access to airport personnel. Although providing signage and web-based information

is helpful, it is still necessary to have staff available to answer questions and provide additional assistance, as needed. This is especially important to older travelers and travelers who simply need help with directions rather than full assistance. Travelers with cognitive limitations and dementia may need more assistance than mandated by Part 382 in the ACAA regulations. This gap can be addressed through the use of airport and Travelers Aid volunteers as well as through provision of paid services.

The following notable practices ensure better access to airport staff/volunteers.

Notable Practices

Assigned Personnel to Respond to Contact Number at All Hours. Assign a specific person/division to respond to contact numbers, including after-hours, such as airport security personnel. The airport should then funnel the request to the appropriate business partner or contract or, in some cases, provide the help themselves.

Contact Information Available on Website, Social Media, and Key Airport Locations. Provide contact information (available 24/7) on the airport’s social media, website, app, and signage at information counters throughout the airport.

Deployment of Trained Airport Volunteers, Airport Personnel, or Third-Party Contractors. Use airport volunteers or Travelers Aid to make trained personnel available to assist travelers throughout the terminal. Roving volunteers are helpful because they can be found in any area of the airport. At PANYNJ, Airport Customer Experience staff—also called Red Coats because of their uniforms—are stationed to assist at welcome centers landside. These paid staff go through in-depth training on how to assist all types of travelers. Several of the Authority’s airports also have volunteers with Travelers Aid on-site to provide individual assistance to travelers with disabilities or anyone who needs assistance. Straw Buddies at LHR are specially trained in assisting people with mental and emotional disabilities and can fill the role of a friend if they need someone to talk to. LHR also has a new Airport Ambassador team that provides travelers with roving assistance by unpaid volunteers who are familiar with the airport.

Easily Identifiable Uniforms. Review uniforms and accessories (e.g., pins or tags that say “Ask Me” or “Volunteer”) of airport CX employees and volunteers to ensure that they are easily identifiable by airport travelers (see Section 4.3.3 for further information).

Provide Information About Uniforms on Website and Social Media. Describe the uniform, button, or vest on the airport website and app, in public relations releases, and at stakeholder meetings to elevate awareness of how to identify airport staff and volunteers.

6.4.3 Use of New Technology to Improve Communication

Technology continues to improve communication for travelers with and without disabilities. In a noisy airport environment, anyone may miss hearing public address, or PA, announcements, so detailed visual information on gate information displays (GIDS) benefits the general public as well as those with hearing loss.

The following notable practices describe how to use technology to improve communication for travelers with disabilities and older adults.

Notable Practices

Hearing Loops. Airport announcements are easily missed by travelers because of the noisy environment, especially by travelers with hearing loss. Airports with large retirement

communities, such as PHX and Sarasota Bradenton International Airport (SRQ), are now installing hearing loops.









Visual Paging. Flight Information Display Screens (FIDS) are a key source of information for travelers awaiting their flight. As space allows, multiple banks of FIDS should be placed throughout the check-in area and concourses at a height that allows for close approach. Placing FIDS at eye level and ensuring high contrast between text and background colors will better accommodate travelers with low vision and will make it easier for people of short stature and those seated in wheelchairs to see the screens. Visual paging information should be placed on FIDS and baggage information display screens (BIDS), and airline gate area screens. YVR recently expanded its visual paging locations throughout terminals to now be included on FIDS and BIDS. Visual paging will also soon be added to airline gate areas. To ensure FIDS and other variable message signs meet standards of accessibility in terms of contrast, glare, positioning, font size, and refresh rate, airports can refer to the 2017 International Code Council (ICC) A117.1-2017 Standard for Accessible and Usable Buildings and Facilities, Section 703.7, which provides the first standards for variable message signs (VMS).

Videos with Sign Language. Add informational videos that include sign languages. For example, YVR will be adding more informational videos shown in sign languages, based on community feedback. The videos are filmed in American Sign Language, Quebec Sign Language (LSQ), and International Sign. Interpreting services are also being expanded to include video interpreting services, which can be used by visiting information booths equipped with iPads throughout the terminal. Based on feedback from travelers with hearing loss, YVR found that more information is needed in an easy-to-use, accessible format. To address this, the airport developed a new digital, accessible information kiosk.

Apps as Communication Tools. Provide staff with apps that bridge the communication gap with people who use sign language or have vision loss. For example, YWG encourages staff to download communication tools on their phones; one such tool is Mimics 3D, which allows for communication using sign language as well as basic text-to-speech features on smartphones.

Familiarization Programs. Familiarization programs offer travelers with autism and other cognitive or physical disabilities the opportunity to practice many aspects of the airport journey to prepare for upcoming travel, from arriving at the airport and going through security to getting to the gate. When airlines partner with airports or host the familiarization program themselves, participants might also be allowed to board the aircraft, find their seat, and even experience pushback to see, hear, and feel what taxiing on the runway is like.

- SFO and JetBlue partnered with The Arc in 2018 to develop and host the Ready, Set, Fly program. The workshop and onboard experience taught participants about pre-trip planning and provided resources to help travelers have enjoyable travel experiences in the future (Cole et al. 2019). *ACRP Synthesis 101: Communication Strategies for Airport Passenger Access and Mobility* states, “The Ready, Set, Fly program is an excellent example of how an airport can contribute to passenger education” (Cole et al. 2019).
- The MIA Airport Instruction and Readiness (MIAair) program provides travelers with cognitive or developmental disabilities such as autism with an opportunity to practice the travel experience prior to travel. The MIAair program and other resources were developed by MIA in collaboration with the University of Miami-Nova Southeastern University Center for Autism and Related Disabilities and the Ear Institute at the University of Miami Health System. The resources available online include social stories/narratives (MIAair Social Narrative), a caregiver information packet, and an airline travel checklist, all in English and Spanish on the MIA website (Miami International Airport, n.d.-a).

Assessment Tools to Assess the Effectiveness of On-Site Customer Communication and Information	
	○ Comment/feedback tracking —customer feedback via website, social media, comment cards, observation.
	○ Usage data —specific to travelers with disabilities.
	○ Customer satisfaction surveys —such as kiosk exit surveys.
	○ User testing/feedback —of apps and other programs provided to improve communication.
	○ Electronic/static rating.
	○ Mystery shopping —to gather feedback on on-site communication and information.

6.5 Wayfinding

The “Airport Wayfinding Accessibility Audit” provides an extensive checklist on the signage recommendations and requirements to address travelers with different disabilities (Harding et al. 2017).

6.5.1 Signage Systems Can Be Enhanced to Improve Navigation for Travelers with Disabilities and Older Adults

ACRP Research Report 177 states that until facilities are designed to be fully intuitive, signage will always be the most important aspect of wayfinding (Harding et al. 2017). However, if accessibility is not considered in the design process, this useful resource can quickly become an obstacle. Common pain points include when signage is cluttered and when low-contrast colors and uncommon symbols are used.

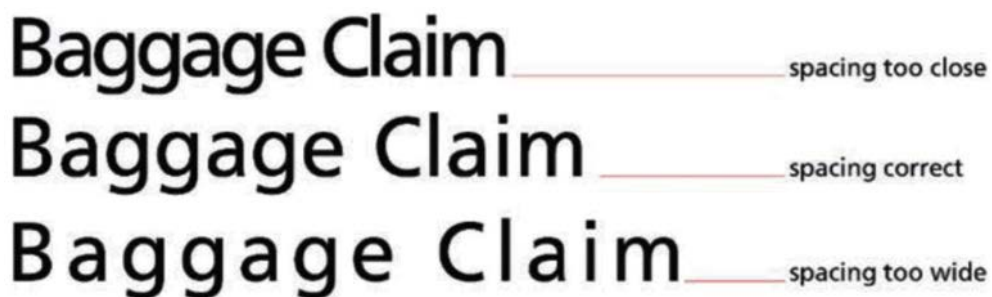
Basic best practices in signage design include, but are not limited to, using color combinations that achieve high contrast (light on dark or dark on light), using large font size with wider letter spacing, and using both words and common symbols. Figure 19 is an example of high-contrast coloring and large font size with adequate space between letters.

ACRP Research Report 177 identifies several factors that should be considered when designing signage, including

- Conspicuity,
- Color,
- Contrast,
- Illumination,
- Legibility,
- Typography,
- Symbols,
- Arrows, and
- Maps.

These factors are described in more detail in *ACRP Report 177*, Chapter 3.2.1 (Harding et al. 2017).

In addition to design, it is important to be purposeful in the placement of signage. Poor placement can unintentionally hide signage behind other signs and architectural features, such as the ceiling on vertical transitions. Travelers who use wheelchairs and those of short stature are more commonly affected by poor placement because of obstructed sight lines when looking from a lower angle. This is another opportunity for airports to include people with disabilities in accessibility assessments. By including people who use mobility devices in the initial placement of signage as well as in periodic accessibility checks, signage can remain equally reliable for travelers with and without disabilities.



Source: Harding et al. 2017.

Figure 19. Comparative letter-specific guide.

Notable Practices

The following notable practices cover enhancing signage systems.

Gaps in Signage. Review existing signage to ensure there are no gaps, misdirection, or missing information causing travelers to lose their way.

Signage Placement. Review existing signage to ensure signage is clearly viewable by people who are of short stature, are seated in a wheelchair, or have limited vision.

Font and Colors for Signage. Review wayfinding signage to ensure that the font and colors are readable by all passengers, including those with low vision.

Signage with Words and Pictograms. Include both words and pictograms for travelers with cognitive disabilities and foreign travelers.

Floor Graphics. Provide floor graphics to guide travelers, particularly wheelchair users, where appropriate. Airports that effectively use floor graphics include SEA and YVR; the latter uses them to direct customers with allergies along their fragrance-free route.

Roving Ambassadors. Deploy roving ambassadors who are “free” to guide customers in need as they navigate the airport.

Accessibility Audit. Develop a proprietary airport wayfinding accessibility audit, or use examples from other sources.

Travelers Aid and Airport Volunteers. Use of services such as Travelers Aid and airport volunteers provides tremendous value to all travelers, especially those with disabilities and older adults.

To ensure that signage meets standards of accessibility in terms of contrast, glare, positioning, font size, refresh rate, and so on, airports can refer to ICC A117.1-2017 Standard for Accessible and Usable Buildings and Facilities, Section 703.7 for further information on VMS.

6.5.2 Improve Mapping to Provide Easier Navigation to Amenities and Services

The following notable practices describe how to improve navigation to services and amenities.

Notable Practices

Airport Maps with Accessible Facilities and Amenities. Accessible facilities and amenities available to the traveling public should be identified on airport maps and directories, on directional and informational signage, as well as on the airport website and app. Where possible, both symbols and words should be used to help travelers easily identify each location. This information is only helpful if it is accurate, so airports should conduct periodic reviews of maps and signage for accuracy. This is especially important during construction projects or other events that change the location or availability of a service or facility. If any changes are needed, the incorrect information should be covered or removed and replaced with new or temporary signage as soon as possible. Alternatively, the use of digital maps and signage can make it easier to update information.

Text Maps for Individuals with Vision Loss. For individuals with vision loss who cannot access standard maps, list the nearest gate for all services and amenities post-security and provide a text map to orient the individual to the different areas of the airport: arrival points, check-in lobby, security, and concourses. Text maps are a useful alternative, as they provide a description of the airport layout along with a more detailed description of terminals and concourses. These maps are made available online so travelers can plan their path out ahead of time. *ACRP Research Report 177* describes text map principles and provides an example from Austin-Bergstrom International Airport (AUS) (Harding et al. 2017).



Restroom Signage and Location. Review signage and locations for accessible restrooms to ensure their convenience, including companion restrooms, pre-security and throughout each concourse.

Tactile Maps. Airport maps and directories are not typically accessible for travelers with vision loss, especially when their vision loss is severe. Tactile maps are a useful tool that help a person who is blind orient to space by feeling a raised outline of the mapped area. Provide tactile directories with pictograms at elevator banks, in elevator cars, and outside service animal relief areas. Although this is not required under ADAAG, this Universal Design (UD) solution benefits those with vision loss, cognitive disabilities, and limited English proficiency. This solution, first adopted at SFO for its Service Animal Relief Areas (SARAs), has also been used for SARAs at Chicago O’Hare International Airport (ORD) and at MSP as well. Tactile maps of full terminals, however, are not common.

Sensory Maps. New to the mapping space are sensory maps that identify high and low sensory areas. These allow travelers with sensory sensitivities to prepare for additional noise and crowded areas and to find quiet areas and plan a more comfortable route. Sydney International Airport (SYD) has sensory maps for departure and arrival levels in Terminal 1, Terminal 2, and



Source: Sydney International Airport, n.d.

Figure 20. SYD layout map.

the International Terminal available on the web. Figure 20 is an example of the layout legend, which identifies sensory locations.

6.5.3 Visual Assistance Provided Through Terminal Design

Many travelers prefer to move through the airport independently, whether using wayfinding technologies or simply following signage. However, even the most experienced travelers can find themselves lost or confused when they are not provided with enough information.

The following notable practices improve visual assistance through terminal design.

Notable Practices

Intuitive Terminal Design, Including Tactile Paths. Terminal design should be intuitive so that travelers can naturally find their way to check-in, through security, and to their gate. *ACRP Research Report 161* echoes this concept, stating

While many airport terminals rely heavily on various forms of informational signage to guide customers from one point to another, the creation of an environment that promotes natural wayfinding is an important consideration in improving the CX. A well-designed space with open architecture with direct lines of sight to the destination provides a more intuitive wayfinding experience and reduces the need

to rely on signs. Natural wayfinding utilizes the architectural properties of a terminal to guide passengers from one process to another rather than directing them with signage. Minimizing level changes and sharp turns in direction and creating clear sightlines enhance natural wayfinding. The use of transparent materials to separate spaces also aids in natural wayfinding because customers can see what lies ahead and confirm that they are walking in the right direction (Landrum & Brown Inc. 2016, p. 23).

In line with architectural features, tactile paths and guiding tiles are common design features in Europe and Asia. People with vision loss who use a white cane can follow these paths to stay on the right path and avoid obstacles while navigating their environment.

Wayfinding Accessibility Audit Checklist. To help airports self-assess their wayfinding strategies and accessibility features, Appendix A of *ACRP Research Report 177* provides a Wayfinding Accessibility Audit Checklist, downloadable in a separate, digital format; see Figure 21 for an example of the checklist elements for departing passengers. In this case, as in many others, the design features mostly benefit everyone, whether their disability affects vision, hearing, cognition, or mobility (Harding et al. 2017). The checklist is a comprehensive tool that identifies the wayfinding and accessibility features recommended for each key touchpoint in the passenger journey, along with which of the three Vs of communication and which standards or regulations apply to each feature. Based on the principles of UD, it also covers ADA Accessibility Standards so that airports can use this tool to meet or exceed compliance.

Internal Assessments and Walk-Throughs. Airports can also conduct their own internal assessments and walk-throughs. Including representatives from disability organizations and travelers with disabilities is a great way to develop an understanding for wayfinding needs

Wayfinding Accessibility Audit Checklist							
Departing Passenger (D)							
Section 5.1: Departures Arrival Points (AP)/5.1.1 Curbside							
D-AP.01	Accessible drop-off points for people with disabilities have been designated by the airport, appear on web, mobile, and terminal maps and directories, and are appropriately signed for easy viewing from roadways.	Visual Virtual	X	X	X	X	Passenger loading zones scoping and design: 2010 ADAAS 209 and 503
D-AP.02	Walking surfaces are stable, firm, and slip-resistant, inside and outside terminals and parking garages, and have no openings larger than 0.5".	Visual	X	X	X	X	2010 ADAAS 302.3
D-AP.03	Visual and auditory signals are in place at pedestrian crossings with traffic lights, with adequate crossing time for those who move more slowly.	Visual	X	X	X	X	
D-AP.04	Where there are no signals, pedestrian crossing signs are prominently displayed for drivers and pedestrians. Raised pedestrian crossings help to slow traffic while providing level access. Speed bump signage and road markings are in place.	Visual Virtual	X	X	X	X	
D-AP.05	Pedestrian crossings have higher illumination levels and/or different colors.	Visual	X	X	X	X	

Source: Harding et al. 2017.

Figure 21. Checklist sample for departing passengers.

among people with different needs. Collaborative walk-throughs with the disability community can also help identify obstacles that wouldn't otherwise be noticed. For example, PIT hired a disability organization to assess the wayfinding features and accessibility of the airport. The findings of the report were presented to the internal accessibility committee along with the external disability advisory board.

6.5.4 Wayfinding Technologies









Technology has made a significant impact on wayfinding and navigation, particularly for people with vision loss. Mobile wayfinding applications with turn-by-turn directions enable users with vision loss to navigate an environment independently.

According to SITA's report *Air Transport IT Insights 2019*, 45% of airport apps provide navigation/wayfinding within the airport, up from 41% in 2018 and 37% in 2017. In addition, 77% of airports plan to have "interactive navigation" investment plans by 2022 (SITA 2019).

The United States has been a leader in development of wayfinding apps for persons with vision loss, including BlindSquare and NavCog; these apps are available using beacon technology in Toronto Pearson International Airport (YYZ) and PIT, respectively. Aira is another technology that provides users with a remote, sighted guide. More than 40 airports in North America now offer free use of Aira to customers while on-site, while Europe relies instead on an infrastructure solution: tactile guiding tiles.

ACRP Research Report 177, Section 8.3 provides mobile application developers with a set of principles and checklists to improve utility and usability for all travelers (Harding et al. 2017). The report also provides guidelines on the following:

- Factors for consideration in signage design;
- Airport planning and design considerations;

Assessment Tools to Evaluate Wayfinding	
	○ Comment/feedback tracking —customer feedback via website, social media, comment cards, observation.
	○ Focus groups and intercept interviews —to gather feedback on wayfinding.
	○ Usage data —of wayfinding technology.
	○ Other tools, such as <ul style="list-style-type: none"> • Journey mapping, • Other self-evaluation exercises that include persons with various disabilities, • Pilot study with local advocacy organizations when considering adding floor graphics or other visual guidance, and • User testing with travelers with varying degrees of vision loss.
	○ Internal audits —audits such as self-evaluation with disabilities, as recommended by the FAA's <i>AC 150/5360-14A - Access to Airports by Individuals with Disabilities</i> .
	○ Customer satisfaction surveys —specific questions related to wayfinding.
	○ Mystery shopping/shadowing.
	○ Accessibility Checklist —Wayfinding Accessibility Audit Checklist in <i>ACRP Research Report 177</i> .

- Wayfinding and accessibility features for departing, arriving, and connecting customer journeys; and
- Technologies including accessible websites, help/call points, interactive kiosks, digital wayfinding directories, FIDS, hearing loops, visual paging, and mass notification systems.

The following notable practices improve wayfinding technologies available at the airport.

Verbal Wayfinding Assistance. Provide verbal turn-by-turn wayfinding assistance in an airport app.

Notable Practices

Free Third-Party Services. Provide free third-party services for traveler use, such as airport-provided Aira minutes.

Information Regarding Apps Provided on Websites. Promote the availability of apps and download instructions on airport websites and social media.

Accessible Mobile Apps. Ensure that mobile apps are accessible using current WCAG standards.

6.6 Emergency Planning and IROPS

Airlines are primarily in charge of accommodating the needs of their passengers, including those with disabilities, during IROPS. Many travelers, especially frequent travelers, use airline mobile applications throughout their journey and are accustomed to receiving notifications. Using existing airline mobile apps as a method to disseminate emergency communications gives airports an additional means of outreach while keeping operating costs low. Integration of emergency communications into an airline's mobile application requires that the airport execute an agreement with the airline to share its emergency notifications through an application programming interface or another networked solution. Through this arrangement, each airline operating at a specific airport receives the emergency communication and can distribute it through the airline's proprietary application (IEM Inc. 2019).

There are several notable practices an airport can implement to ensure that varying communication limitations among people with disabilities—particularly those with vision loss, hearing loss, or cognitive disabilities—are taken into consideration during emergency communication.

Specific Instructions Included in Airport Emergency Plan. Include specific instructions in the airport emergency plan, and in discussions with command center staff and/or emergency response planners, for providing accommodations during IROPS and emergencies for travelers with various disabilities and/or older adults.

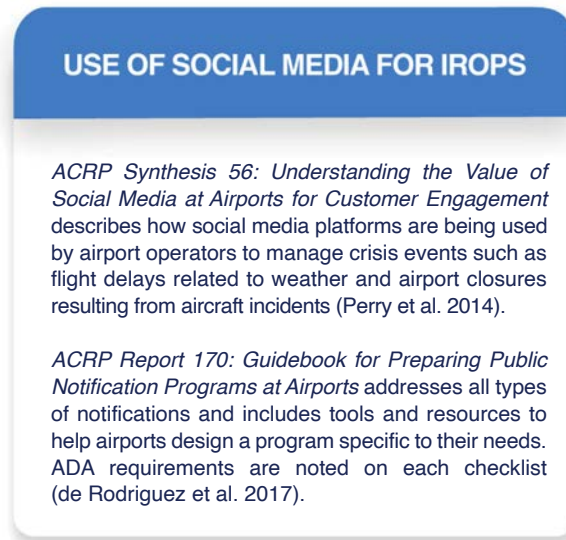
Notable Practices

Inclusion of Community Organizations. Invite community organizations representing various segments of travelers with disabilities and older adults to participate in providing suggestions when planning tabletop or disaster planning exercises.

Relevant Literature, Guides, and Guidance. Review relevant literature and guidance to identify some of the short-term solutions that can be implemented immediately. Helpful titles include

- *Evacuation of People with Disability & Emergent Limitations: Considerations for Safer Buildings & Efficient Evacuations;*
- *ACRP Research Report 170: Guidebook for Preparing Public Notification Programs at Airports;*
- *ACRP Research Report 210: Innovative Solutions to Facilitate Accessibility for Airport Travelers with Disabilities;*

- *ACRP Synthesis 56: Understanding the Value of Social Media at Airports for Customer Engagement*;
- FAA’s guidance document “Best Practices for Enhancing Traveler Experience: Addressing the Needs of Persons with Disabilities and Individuals with Limited English Proficiency in Airport Emergency Evacuation Plans”; and
- Federal Emergency Management Agency’s “Guidance on Planning for Integration of Functional Needs Support Services in General Population Shelters.”



Collaboration with Stakeholders. Develop emergency response and IROPS plans in collaboration with stakeholders. For example, “Emergency Evacuation Policy” from San Jose International Airport (SJC) has sections on passengers with disabilities and functional limitations and is available on their website.

Inclusion of Persons with Disabilities. Include people with disabilities in emergency exercises. *ACRP Synthesis 90* lists a number of airports, such as MSP and LAX, that include individuals with a variety of disabilities in their exercises (Smith and Haines 2018).

Inclusion of ADA Coordinators. Include an ADA coordinator in the emergency command center, a solution first implemented at both Houston airports: William P. Hobby Airport (HOU) and Houston George Bush Intercontinental Airport (IAH).

Emergency Preparedness Kits. Include supplies for older adults, people with disabilities, service animals, and so on in emergency preparedness kits (e.g., adult diapers, catheters, sanitary pads, dog food).

Review of the Airport Emergency Plan. Review the airport emergency plan to discover specific planning elements that address the various segments of travelers with disabilities and older adults and ensure that the plan accommodates their needs in times of crisis.



Inclusion of Emergency Plan Information on Websites and Terminal Signage. Provide specific information on emergency plans on website and terminal signage to ensure accessibility for travelers with disabilities and older adults during all IROPS.

Disability Awareness Training for Airport Stakeholders. Provide disability awareness training for airport stakeholders on how to enhance their assigned responsibilities for people with disabilities and older adults.

Disability Awareness Training for First Responders. Provide airport accessibility communication/disability awareness training for first responders.

Evacuation Chairs at Stairways. Stage evacuation chairs in or near stairways to use when elevators are out of service. Airports with evacuation chairs include SJC and Philadelphia International Airport (PHL).

Accessible Emergency Communication System. Ensure that the emergency communication system meets the accessibility needs of all travelers (e.g., visual fire alarms, verbal announcements, visual messaging on FIDS and GIDS, and SMS messaging). For further resources on emergency planning and crisis management for travelers with disabilities, refer to Appendix B.

Assessment Tools to Evaluate IROPS	
	Comment/feedback tracking —post-incident and exercise reviews (including feedback from people with disabilities).
	Other tools, such as <ul style="list-style-type: none"> • Reviewing the airport emergency plan to determine existing arrangements and revise as needed, and • Reviewing existing arrangements for travelers with disabilities and older adults with appropriate community groups.

6.7 Mini Case Study

MINI CASE STUDY: TORONTO PEARSON INTERNATIONAL AIRPORT EFFECTIVE COMMUNICATION

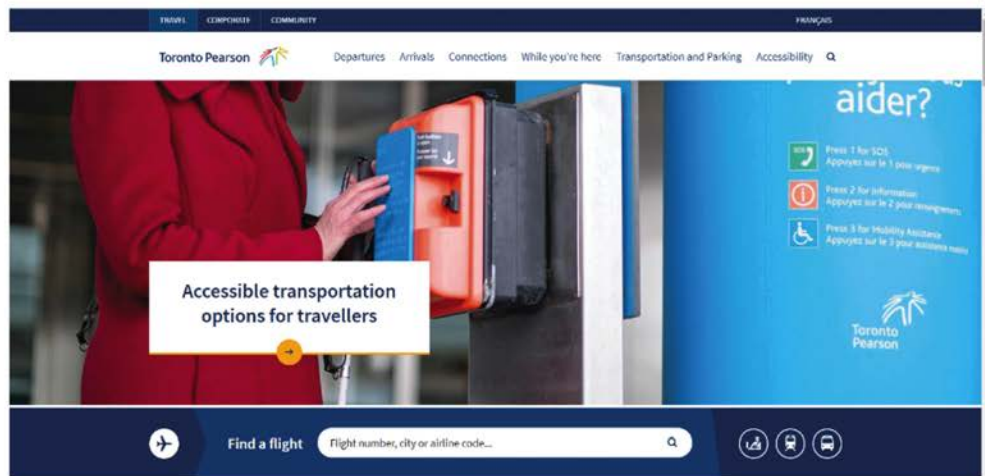
Example of effective communication and navigation

Digital accessibility and communication

Region: Canada

Toronto Pearson (YYZ) excels at communication for persons with disabilities both pre-trip and at the airport. The website lists a phone number staffed 24 hours a day that travelers may call when arriving curbside or at the parking garage. Live chat is available for those who prefer to text any questions or requests pre-trip or while onsite. The website includes a Web Accessibility Statement and provides details on the airport's numerous amenities and services.

A new accessible help point with braille and tactile signage that enables customers to request assistance curbside is featured on the homepage.



Toronto (YYZ) home page with honor banner highlighting accessible help points

Travelers can request assistance using accessible help phones near the designated drop off area for travelers with disabilities (parking garage, light rail station). The phones connect to a central information counter where airport personnel will ask for a description of the traveler and the airline they're flying with, then the traveler is connected to an airline representative who dispatches an agent to assist the traveler at their location. Once in the terminal, YYZ staffs over 350 volunteers in addition to paid staff that provide customer service and passenger assistance at the airport.

Collaboration and communication with key stakeholders

YYZ, rather than having a disability advisory committee, works with individual groups based on the gaps that it has identified in its programs, services and facilities. The airport collaborates with the airlines through a number of different committees, including the Airport and Airline Operators Committee, to address any operational requirement or concern. An earlier committee helped to design the assistance services program and set basic service levels (KPIs). The airport holds bilateral conversations with individual carriers and meets monthly with a small subset of airlines to review how well the core services are functioning, specifically the electric cart service and wheelchair loan service subcontracted by the airport.

Assessment tools

To measure customer satisfaction, YYZ posts an "Accessibility Feedback Survey" which asks travelers to evaluate the following:

- Wheelchair assistance
- In-terminal shuttle
- Aira
- Blindsquare
- Magnus
- Accessible toilets
- Pet relief area
- Self-service kiosk, and
- Sunflower lanyard

Customers with disabilities can also provide feedback through intercept interviews, QR codes, when signing onto airport WiFi and via social media.

Facility Accessibility

7.1 Introduction

All travelers have a basic right to facility accessibility while journeying through airports. While the ADA mandates minimum requirements, airport facilities still lack many elements to accommodate travelers with disabilities and older adults. Many airport terminals were designed and retrofitted decades ago and did not consider as many traveler comforts and needs as architects and designers do today, further exacerbating the issue. Another key issue is that travelers do not know who is responsible for assisting them when arriving at facilities such as parking, rental cars, curbside, or the terminal.

This chapter provides notable practices on improving facility accessibility, including

1. Access on arrival (curbside, parking, or other drop-off points);
2. Terminal layout and design (architecture, sounds, changes in gradient or texture of flooring); and
3. Equipment accessibility and accessible airport features.

7.2 Access on Arrival

Even when there are multiple transportation options, the arrival points for travelers with disabilities and older adults may be limited due to several factors, as noted in *ACRP Research Report 210* (Van Horn et al. 2020), including

- Accessibility of the available modes of transportation;
- Location of airport arrival point (curbside or remote) and if remote, distance to walk and/or accessibility of shuttle or automated people mover;
- Availability of disability-related assistance and means to request it at the arrival point; and
- Availability of assistance with luggage.

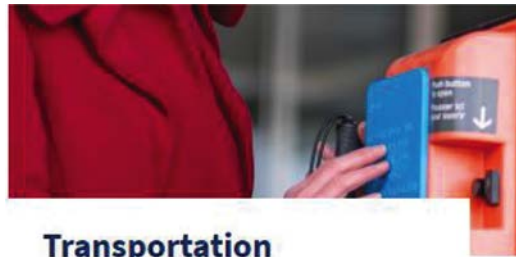
7.2.1 Provide Accessible Ground Transportation

Although required under ADA, a lack of equitable access to ground transportation, such as taxis, TNCs, and hotel shuttles, is a fairly common problem. Travelers with reduced mobility, particularly those who use wheelchairs and scooters, are often faced with extensive wait times, and some are left without any transportation, because of a lack of accessible transportation options.

Section 2.7 of the FAA's *AC 150/5360-14A - Access to Airports by Individuals with Disabilities* outlines the airport's responsibilities related to ground transportation provided at the airport (e.g., fixed route and interterminal shuttles) as well as transit facilities, such as bus stops and light rail stations, on airport property.

Navigating the Chapter

This chapter is divided into main subject areas with notable practices, benchmarks, and assessment tools provided for each subject. A mini case study that illustrates a number of notable practices is included at the end of the chapter.



Transportation accessibility services →

There are many ways to travel to and from Pearson. Whether you're parking, travelling between terminals, or getting picked up and dropped off, there are accessible options.

Source: <https://www.torontopearson.com/en/accessibility>.

Figure 22. Accessible transportation options at YYZ.

Airports are also responsible for monitoring compliance of private ground transportation providers operating with licensing or contractual agreements at the airport. Federal accessibility requirements vary depending on vehicle type, size, and the provider's operations, so many operators are not actually required to have an accessible vehicle in their fleet. This is a major cause of limited accessibility to commercial airport shuttles, hotel shuttles, taxis, and TNC services.

Some airports are working to close this gap with airport-owned accessible vehicles as well as establishing relationships with local transit providers:

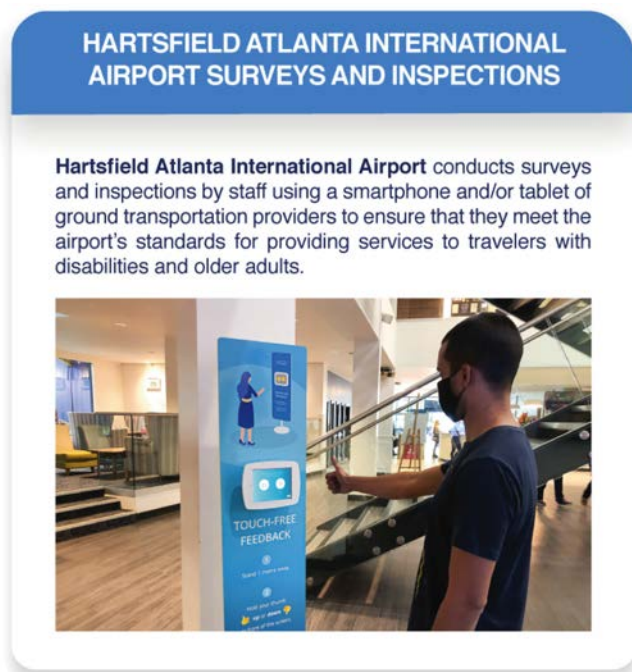
- MSP and LAX offer a free accessible shuttle between terminals on request.
- LAX works with destination shuttle services to connect the airport with 13 hotels in the area using multiple accessible vans.
- PHX worked with the City of Phoenix to require TNC companies like Uber and Lyft to provide lift-equipped service within half an hour of the request.
- Disney's Magical Express Bus is a bi-level, accessible motorcoach, designed with the National Council on Independent Living, that picks travelers up from MCO. This model was also trialed by Metropolitan Transportation Authority in New York City.
- A lift-equipped parking shuttle to and from the ValuPark lot provides CVG travelers with driver assistance and pickup/drop-off at their vehicles.

To ensure compliance with FAA regulations, airports are responsible for oversight that includes technical assistance, monitoring, and self-evaluations. Self-evaluations include initial and periodic reviews of facilities and structures, services, policies and practices, and development of plans to address any deficiencies or service gaps. More information about ground transportation regulations and airport oversight can be found in Chapter 4 of *ACRP Research Report 210*.

The following notable practices enhance accessibility of ground transportation.

Notable Practices

Accessibility Requirements for all Ground Transportation Operators. Require all ground transportation operators to provide accessible hotel, airport, taxi and/or TNC services upon request and within a reasonable wait time; change contract language to include this requirement, and negotiate an acceptable wait time.



Hartsfield Atlanta International Airport conducts surveys and inspections by staff using a smartphone and/or tablet of ground transportation providers to ensure that they meet the airport's standards for providing services to travelers with disabilities and older adults.



Standards and Processes for Oversight and Monitoring Compliance. Establish compliance standards and processes for oversight and monitoring compliance of transportation providers, including penalties for noncompliance in all contracts to allow for repercussions.

Requirement to Provide Accessible Vehicles. Require ground transportation providers who do not have accessibility requirements under ADA to have at least one accessible vehicle or an alternative transportation option available at all times.

Direct Observations/Mystery Shopping. Direct observation by customer service agents or “mystery shoppers” provides effective assessment of ground transportation providers. For example, IAH has a “Secret Rider Program” that includes people with disabilities in testing the quality and accessibility of services provided by shared-ride vans, courtesy parking vans, and other ground transportation providers.

7.2.2 Designate Pickup/Drop-Off Areas for Travelers Needing Assistance and Provide a Means to Request Assistance

Finding assistance upon arrival on airport property was identified as the most common challenge for travelers arriving curbside, in a parking garage or lot, and at facilities that are remote from the main terminal. Airports who move pickup and drop-off locations to areas other than curbside and relocate inter-modal connections to remote facilities create an even greater service gap, which may exclude some individuals from traveling and subject others to additional stress and fatigue (Ryan et al. 2021; Van Horn et al. 2020).

ACAA requires airlines to provide assistance to travelers with disabilities on arrival at the “terminal entrance.” While some carriers offer curbside check-in or skycap service, many do not; nor do all air carriers provide a means to request assistance on arrival.

Effective January 2021, a new requirement under Canada’s ATPDR mandates that airports provide and take reservations for curbside service (i.e., service into and out of the terminal from ground transportation arrival points) (Canada Transportation Act, SOR/2021-9).

The FAA National Civil Rights Training conducted in August 2020 states that if airlines do not have any means to enable people to contact them for assistance curbside, then this is an area where airports should, under ADA requirements, address the gap.

The following notable practices improve accessibility of assistance upon arrival at the airport.

Notable Practices

Designated Accessible Loading Zones. Designate accessible loading zones on arrivals and departures levels adjacent to curb cuts. Identify zones with clearly visible signage and roadway markings. At MSP, a large digital sign displays the universal symbol of accessibility (wheelchair symbol) and directs travelers needing assistance to two specific doors where service providers are stationed.

Europe is the leader with regard to accessible help points, as these are mandated by Regulation (EC) No 1107/2006 for all designated arrival points at their airports. European airports manage the assistance contract with one provider and are required to provide an accessible kiosk or other means to call for assistance at all arrival points, including designated curbside set down points as well as parking and public transit arrival points. LGW goes a step further with a curbside office and waiting room next to an accessible loading zone.

Information on Designated Areas. Communicate the designated area by signage as well as by location on the airport layout map on the website and airport app. PDX’s website provides details on what travelers should tell the airline when making their request, including the number of bags they will have, and provides a phone number to call upon arrival.

Contact Number or Other Means of Communication to Request Assistance Upon Arrival. Provide a contact number on signage and online that can be called or texted, or provide a push button, kiosks, courtesy phone, or other means of requesting assistance at each major airport arrival point. Travelers at DEN can use a kiosk to call for assistance from service providers at the light rail station. SEA provides electric cart and wheelchair service on demand between the light rail, parking garage, and terminal and posts a phone number for their contracted service provider. See Section 5.2.2 of this report for guidelines on how airports can provide and monitor important assistive services between the point of arrival and the terminal entrance.

WHEELCHAIR ASSISTANCE



At **Portland International Airport**, customers can request wheelchair assistance from the parking garage by calling a number posted on the airport website.

At **San Francisco International Airport**, two reception areas are located at the first and last door of the international terminal with seating and a supply of wheelchairs at the ready.

Assessment Tools to Assess Access on Arrival

	○ Comment/feedback tracking —customer feedback via website, social media, comment cards, observation.
	○ Customer satisfaction surveys —such as end-of-use surveys.
	○ Mystery shopping —to measure standard wait times.

7.3 Terminal Layout and Design

The ADA Accessibility Standards focus primarily on physical accessibility, particularly for people who use wheelchairs, and set minimum accessibility standards that do not fully meet the unique needs of people with disabilities of all types. Even with a primary focus on access for people with wheelchairs, the current standards do not accommodate the increasing footprint of wheelchairs and subsequent greater turning radius, unlike other countries such as Australia and the United Kingdom. Both have now increased their minimum standard to accommodate larger wheeled mobility devices (Steinfeld et al. 2010).

These standards have also been raised in the 2017 edition of International Building Code (IBC)/American National Standards Institute (ANSI) A117.1, but it will still take some time before the change is made to the ADA Accessibility Standards. The U.S. Access Board held a webinar titled “Harmonization Between the ADA Standards and IBC/ANSI A117.1” to alert users of the IBC to these critical changes (Mazz and Paarlberg 2017).

In addition to adopting these new criteria, airports are encouraged to adopt a more universal, inclusive approach to terminal and facility design.

7.3.1 Adopt a More Universal, Inclusive Approach to Terminal and Facility Design

Given the changing accessibility needs, and upcoming changes to design standards, airports are encouraged to adopt a more universal, inclusive approach to terminal and facility design. Universal Design (UD), as the name suggests, attempts to meet the needs of people of all ages, sizes, and abilities. According to the Universal Design Society, UD is “an approach to design that works to ensure products and buildings can be used by virtually everyone, regardless of their level of ability or disability” (The Center for an Accessible Society n.d.).

UD is gaining traction in the United States at airports such as SFO and MSP, which have their own architects specialized in its application. MSP’s architects go a step further to review any changes to architecture and signage with the Travelers with Disabilities Advisory Committee before beginning construction.

In the United States, PANYNJ formulated its plan for improvements in accessibility in a document titled “Supplemental Accessibility Requirements.” The plan, introduced in conjunction with the 30th anniversary of the ADA in July 2020, makes PANYNJ an “early adopter” of some of the increased accessibility standards from the ICC A117.1-2017 Standard for Accessible and Usable Buildings and Facilities. It also commits PANYNJ to adding new disability amenities not required by federal and state regulations. Highlights of these changes include

- Larger wheelchair turning space (increased from 60” to 67”),
- Longer clear floor space for wheelchairs (increased from 48” to 52”),
- Hearing loops at airline gates so that travelers wearing hearing aids can hear announcements,
- Adult changing stations located in family restrooms in transportation facilities, and
- Enhanced requirements for accessible tables in restaurants.

The supplemental accessibility requirements included in PANYNJ’s design standards manual apply to all new facilities, not just airports; this includes concessionaires and vendors as well as contractors working on new construction in any facility owned by PANYNJ.

The following is an excerpt from the Executive Summary of PANYNJ’s “Supplemental Accessibility Requirements”:

This document is the result of a collaboration between the Engineering Department, the Office of Diversity & Inclusion, the Port Authority Abilities Network and expert consultants from the United Spinal Association and Studio 5 Partnership, an architecture firm with extensive accessibility experience. The purpose of the collaboration was to identify ways the Port Authority could go above and beyond the minimum accessibility requirements in existing laws and codes, including the ADA, and implement best practices and new approaches to achieve cutting-edge accessibility in our facilities

(Port Authority of New York and New Jersey 2021b).

Notable Practices

The following notable practices improve the accessibility of airport terminals and facilities.

Intuitive Layout and Design. The airport layout and design are major factors affecting independence among travelers with disabilities, particularly those with reduced mobility or cognitive disabilities, and inexperienced travelers in general. In terms of layout and design, terminals should be intuitive so travelers can naturally find their way to check-in, through security, and to their gate. *ACRP Research Report 210* describes how this can be achieved by using design elements to support wayfinding strategies, including

- Architectural features that lead to intended paths of travel;
- Long sight lines;
- Landmarks that help orient travelers and can be used as reminders at major decision points;
- Tile patterns and textured flooring that lead travelers on a particular path;
- Use of high-contrast colors and adequate lighting;
- Maps;
- Signage; and
- Operational or directional communication (e.g., visual, audio, lighted, and tactile) in noisy or dimly lit areas such as drop-off lanes, corridors, and security checkpoints (Van Horn et al. 2020).

More information about accessible design features that support wayfinding can be found in *ACRP Research Report 177* and *ACRP Research Report 210*.

According to the ODO Market Study on Adult Travelers with Disabilities, the most common obstacle encountered at airports is the long distance to or between gates. This result has consistently taken the top spot in the list of common airport obstacles since the first study in 2005 and again in 2015 (Open Doors Organization 2020b).

Address Long Distances Between Strategic Points. Prior to the COVID-19 pandemic, the volume of requests by customers with disabilities and older travelers for assistance in airports was outstripping the ability of airlines and airports to respond efficiently or effectively. Many travelers who request wheelchair assistance don't use a wheelchair or other mobility device in their everyday life; however, airports need to take into consideration that increased walking distances and navigational complexity directly impact travelers' need for assistance.

British Airways Basic Assistance Pilot Program. As described in Section 6.2.3, the British Airways Basic Assistance pilot program attempted to better understand the specific types of help that travelers requesting wheelchair assistance actually need. The results present an opportunity for significant cost savings—while over 50% of travelers indicated they would still use the wheelchair assistance provided, others needing help with luggage, wayfinding, or language can be assisted in groups rather than one by one.

Safe and Strategic Placement of Escalators and Elevators. Elevators are another airport feature that is important for travelers with disabilities, especially for travelers who are unable to use an escalator due to safety reasons. This includes people who use mobility devices, have balance issues, or travel with service animals, as well as anyone unfamiliar or uncomfortable with escalators. Safety is a true concern for all travelers but especially older adults, who are at an increased risk of escalator-related injuries. A study by the Taipei Metro Rapid Transit station, discussed in *ACRP Synthesis 109: Escalator Falls*, found that a majority of falls occur with women over age 65 due to distraction, loss of balance, and not holding handrails while riding the escalator (Hunter-Zaworski 2020).

Airports can mitigate the risk for escalator-related incidents through terminal planning and design. Colocating escalators and elevators provides travelers with an easily accessible, safer alternative to using an escalator. In new construction or as renovations allow, high-volume, flow-through elevators that are adequate for demand should be installed to help with passenger flow and congestion. Elevators should be placed in easy view of escalators and stairs, with the location indicated clearly on nearby signage.

CUSTOMIZED ASSISTANCE



The **Hermes Airports (PFO and LCA)** allocate gates closest to customs and border protection to shorten the walk for arriving travelers; secure bilingual escorts to help facilitate communication; and, arrange to have travelers' luggage delivered to their ground transportation, usually a motorcoach, once they clear customs. There are also designated meeting spots in case people are separated from their group. On the return trip, Hermes organizes remote check-in for passengers and luggage at the hotel. At the airport they just have to drop their bags and go straight to security.

The **Toronto Pearson International Airport (YYZ)** addresses this challenge by providing an in-terminal shuttle service with electric carts, along with a series of benches set at regular intervals airside, between security and the gates. This enhances independence while reducing demand for individual wheelchair assists.



One non-traveler-facing elevator improvement is installing more elevators that connect the apron and the terminal. Travelers with wheelchairs and other mobility devices typically check their device at the gate. Their device is then moved by a service provider or ground crew down to the aircraft to be stowed in the aircraft's cargo hold. On arrival at their destination, travelers wait for their device to be returned to the door of the aircraft, and they are often faced with long wait times because of limited means for the ground crew to get devices, especially heavy motorized wheelchairs, back up to the plane. Installing additional elevators to help this movement would not only lessen the wait time for the traveler, it would also lessen the distance the device needs to be moved and, in turn, reduce the chance of damage.

Review Lighting Throughout the Terminal. Proper lighting is critical for comfortable, easily navigable indoor environments. This is especially the case for people with vision loss or dementia, both of which are most commonly affected by surface finishes that produce glare, as well as people with autism, who may be affected by the flickering of fluorescent lighting. Natural and powered lighting both produce glare and low contrast, which can be hazardous even for people with excellent vision. According to *Design Guidelines for the Visual Environment* (DGVE), the following issues are common in modern buildings:

- Glare from windows and luminaires;
- Confusing reflections on polished walls, floor surfaces, and stairs;
- Optically misleading geometries in floor patterns and stair finishes;
- Inadequate lighting on vertical walking surfaces and stairs;
- Inadequate locations and quantity of task lighting and lack of lighting adjustability; and
- Improper use of light source spectral distribution.

The guidelines also note that focus should be on the following when planning for indoor lighting:

- Quality of the visual environment, such as balanced luminance and low glare;
- Quantity of light in areas where visual tasks are required;

- The vision or view expected to be perceived by occupants; and
- The impact that light has on health and safety (National Institute of Building Sciences 2015).

Identify and Minimize Unpleasant Sensory Experiences. The Sensory Environment Checklist is a guide that helps users better understand the unique ways people with neurodivergent conditions, such as autism spectrum disorder, ADHD, dyslexia, and dyspraxia, experience environments. By understanding sensory sensitivities, the needs of neurodiverse communities are also incorporated into accessible spaces (Rodil 2020). The checklist, divided by visual, auditory, olfactory, and tactile sensitivities, can be found online at <https://bbc.github.io/uxd-cognitive>. A screenshot illustrating visual sensitivities is shown in Figure 23 (UX&D n.d.).

Dementia Friendly Community Environmental Assessment Tool. Another accessibility tool is the Dementia Friendly Community Environmental Assessment Tool (DFC-EAT). Developed in Brisbane, Australia, the tool is designed for companies to self-assess how welcoming their facilities are to persons with dementia based on eight principles of design. For each principle, an airport or another business can rate how well the facility meets the criteria (Fleming and Bennett 2017). A tool kit as well as videos and other training materials are available online from Dementia Training Australia.



Create a Design Standards Manual in Collaboration with Internal Stakeholders and Travelers with Disabilities To Be Used by All Concessionaires, Vendors, and Contractors. *ACRP Research Report 210* identifies resources for best practices aimed at improving the built environment for a number of user groups whose needs are inadequately addressed by governmental accessibility standards. These resources can be used to develop a comprehensive design standards manual for accessibility and include the following:

- Designing for low vision, with reference to DGVE by the National Institute of Building Sciences;
- DeafSpace and designing for people with hearing loss;
- “Autism Planning and Design Guidelines 1.0” by the City and Regional Planning Program in the College of Engineering at Ohio State University, based on “The Six Feelings Framework

Visual

Many neurodiverse people are sensitive to light levels, flickering lights, strong reflections, bright bold colours and busy patterns. Lighting and reflection can also be difficult for those who are neurotypical.

Lighting

Type of check	What to look for	Undesirable	Desirable	Environmental Score	Action Required?	Reasonable Adjustment
Lighting quality is very important to those with neurodivergent conditions.	Is the illumination in the room suitable for members of staff and visitors? Can you choose lighting and furnishings which minimise reflection? LED lights are often a better choice.			1	Yes	Yes
				2	No	No
				3		
				4		
				5		

Source: UX&D (n.d.).

Figure 23. Sensory Environment Checklist.

THE SIX FEELINGS FRAMEWORK

The July/August *PAS Memo*, "Autism Planning and Design Guidelines 1.0" (<http://bit.ly/2wyfC4h>) conceptualizes a framework and guidelines that help adults with autism feel included in their communities in a built environment where they can thrive.

When an adult with autism is using public spaces or infrastructure, planning and design implementations should make him or her:








Source: American Planning Association.

Figure 24. The Six Feelings Framework for Autism Planning and Design.

for Autism Planning and Design” from the American Planning Association (see Figure 24), where the goal is to create an environment where adults with autism can feel included and thrive; and

- Franz, O’Reilly, and Shepherd’s 2017 presentation “Up and Away: Improving the Accessibility of Airports for Travelers With Dementia,” which identifies key considerations for elements to include—such as seating, quiet spaces, staff training, and availability to assist—and avoid, such as excessive auditory warnings and messages (Van Horn 2020).

More detailed information can be found in *ACRP Research Report 210*.

Assessment Tools to Evaluate Terminal Layout and Design	
	○ Comment/feedback tracking —customer feedback via website, social media, comment cards, observation.
	○ Internal audits —such as a self-evaluation that includes individuals with disabilities, as recommended by the FAA’s <i>AC 150/5360-14A - Access to Airports by Individuals with Disabilities</i> .
	○ Customer satisfaction surveys —such as end-of-use surveys.
	○ Mystery shopping.
	○ Checklist —Wayfinding Accessibility Audit Checklist in <i>ACRP Research Report 177</i> .

7.4 Equipment Accessibility and Accessible Airport Features

Equipment and amenities play an important role in facilitating accessibility for travelers with disabilities and older adults.

The following notable practices cover adequate access to power outlets.

Notable Practices

Power outlets are a hot commodity for travelers in general but especially for travelers who use powered mobility devices; travelers with hearing loss relying on their cell phone for communication; anyone with an electronic medical device; and children with autism relying on a cell phone or tablet for social stories, communication, or distractions from the noisy airport environment. Providing additional power outlets throughout the airport benefits everyone. Where possible, outlets should be installed lower to the ground to keep the power in reach of travelers looking to charge their powered mobility device.

WHEELCHAIR CHARGING STATIONS

The **Miami International Airport (MIA)** is the first U.S. airport to install wheelchair charging stations airport-wide. The 10 wheelchair charging stations, as shown in the figure, connect to the charging power on powered wheelchairs and scooters, giving travelers the ability to recharge while waiting for their flight. Stations are located on both landside and airside (MIA Website).



Source: MIA.

7.4.1 Provide Equipment to Facilitate the Movement of People Safely and Efficiently

Equipment that helps move passengers safely and efficiently from one point to the next can play a large role in a seamless travel experience.

The following notable practices facilitate the movement of people safely and efficiently.

Notable Practices

Ambulifts or “High-Lift Trucks.” Ambulifts allow a person using a wheelchair to skip the boarding bridge altogether at many foreign airports. The truck rises to the level of the aircraft and allows the passenger to board or disembark via the airplane galley instead of boarding on the jet bridge with an audience for the lift and transfer. Ambulifts can also be used to move wheelchairs back and forth for stowage, replacing the need for more of the elevators that were discussed earlier. They can also be helpful for emergency evacuations of aircraft and even

terminals. Ambulifts are fairly common in European airports since hardstands are much more common there than in the United States, whereas U.S. airports have instead invested in jet bridges to accommodate larger aircraft.

Eagle Lift. A product from Australia, the Eagle Lift—along with a second model, Eagle 2—is an innovative device manufactured by Haycomp PTY Ltd., a company specializing in lifting solutions for wheelchair users who are unable to self-transfer. In boarding or deplaning, a transfer assistance team helps the traveler position the sling underneath their body. Once the sling is connected to the Eagle Lift, the transfer team operates the lift to raise the traveler and sling and maneuver them onto the aircraft and down the aisle to the seat, where the traveler is lowered and seated for takeoff. The Eagle Lift minimizes the amount of heavy lifting required and provides the traveler with a dignified transfer, free from close physical handling by strangers.

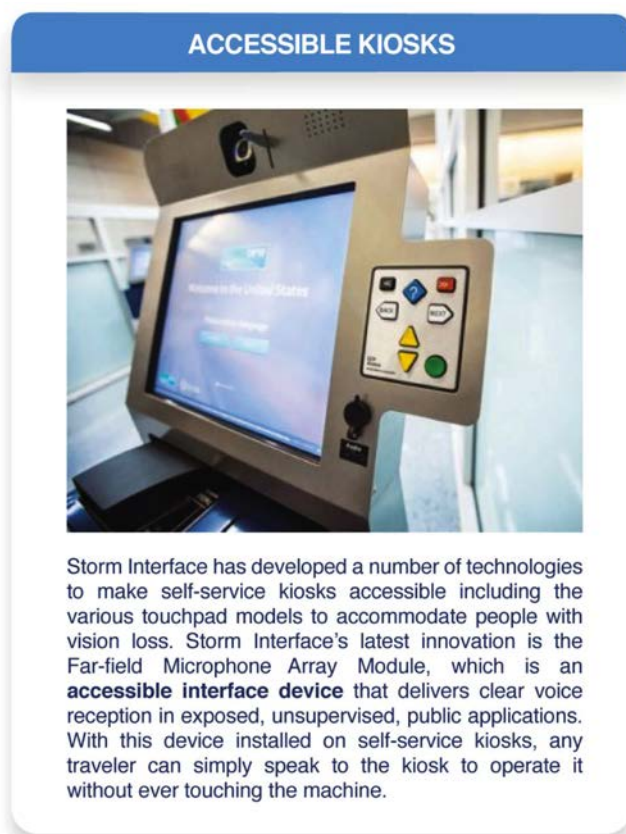
7.4.2 Common Use Self-Service Kiosks

Common use self-service (CUSS) kiosks installed on or after December 12, 2016, must meet the design specifications set by Part 382 and Section 504, with a minimum requirement of 25% accessible by December 12, 2022 (Legal Information Institute n.d.).

The following notable practices describe these kiosk design specifications in further detail.

Identifiable Accessible Kiosks in Standardized Locations. Clearly identify accessible kiosks and standardize their location to provide a valuable service to people with disabilities and older adults.

Notable Practices



Priority Check-In/Dedicated Lines. Enable or direct customers who cannot use kiosks due to a disability to go to the head of the full-service line, as required by ACAA, or provide a dedicated line for customers with disabilities.

Staff Present to Assist. Staff members should be available to direct and assist customers, as required by ACAA. These staff members should be adequately trained to address the needs of various traveler segments, including travelers with disabilities and older adults.

Touchless Check-In. Implement accessible touchless check-in options.

Voice-Activated Kiosks. When legally permitted, kiosks should provide a voice activation feature for travelers who are blind or have low vision.

Regulatory Requirements. Review regulatory requirements under ACAA and Section 504.

Review Industry Notable Practices. An example is the SITA Smart Path Kiosk, a biometric add-on to self-service solution that has been designed to meet IATA's CUSS specifications. This kiosk serves several functions, including booking, changing a reservation, checking in, paying for upgrades or services, and border control. The kiosks streamline passenger processing, allowing for self-service check-in in less than a minute, with key features such as biometric enablement, barcode and passport scanners, and bag tag printers. Airlines are also installing touchless software for their check-in and bag drop kiosks as part of their effort to reassure travelers that it is once again safe to fly.

7.4.3 Seating

With many airports expanding their terminals, long walking distances in airports is becoming a more common obstacle. All functional areas of an airport should have accessible seating, including check-in, baggage claim, and frequent intervals along corridors and walkways.

The following notable practices improve seating accessibility.

Notable Practices

Seating in Ticket Counter Areas. Provide a row of higher seats in ticket counter areas, near the entry to security checkpoint, and at frequent intervals along long concourses.

Seating in Security Re-composure Areas. Provide a row of seats with armrests in each security re-composure area for older travelers and those with reduced mobility, not just low benches without backs or armrests.

Additional Seating Throughout. In any renovations or new terminal designs, plan for additional seating throughout the terminals.

Accessible Seating. Ensure that seating designs meet accessibility needs, such as higher seats with armrests that enable older travelers to more easily sit and stand, as well as seats with no exterior armrest to enable transfer by persons using their own wheelchairs.

Charging Stations. Provide charging stations for devices near or integrated with seating.

7.4.4 Amenities

As renovations and new terminals or concourses are designed, the viewpoint of travelers must be considered, including the need for sensory rooms or quiet areas; lighting and glare adjustments; additional wheelchair storage at locations throughout the airport; provision of electric carts that can transport multiple customers with reduced mobility; or new technologies, such as automated wheelchairs.

ACRP Research Report 226: Planning and Design of Airport Terminal Restrooms and Ancillary Spaces provides prototypes for not only accessible restrooms but also SARAs, companion care restrooms, changing table restrooms, and nursing mothers' rooms. It also discusses how these spaces can best be distributed throughout the terminal (Vange et al., 2021). Many airports are already accommodating travelers with newly developed sensory rooms for travelers with autism and dementia, as well as more adult changing rooms.

The following notable practices cover amenities for travelers with disabilities and older adults.

Notable Practices

Provide Fully Accessible Restroom Facilities, Including Adult Changing Tables. An adequate number of fully accessible restrooms with adult-sized, height-adjustable changing tables are required to meet the needs of adults who are non-ambulatory and require assistance. These should be clearly identified and located landside and airside in each terminal. As of this writing, there are 13 U.S. airports with adult changing rooms, including ATL, AUS, Nashville International Airport (BNA), Baltimore/Washington International Thurgood Marshall Airport (BWI), LAX, MCO, Louis Armstrong New Orleans International Airport (MSY), ORD, PHX, PIT, and SEA; Indianapolis International Airport (IND), MSP, and PHL are also adding this accommodation. Except for ORD, these U.S. facilities feature only an adult-sized changing table. Other than PHX and BWI, all other facilities listed have height-adjustable tables. Bills to mandate adult changing facilities in airports and other public buildings are now working their way through various state legislatures and will likely be required in the future at the federal level under the ADA and Section 504. As of 2015, the Maryland Aviation Administration made it a requirement for BWI per Design Standard 2015-03, New Section 11.8.4, Adult Change Rooms.

Provide SARAs in Each Concourse. In the United States, provision of SARAs post-security is mandatory at all but the smaller airports, unless local service animal organizations grant an exception. Airports are recognizing the need to provide additional service animal relief areas in each concourse. Alternatively, locate a small area in each concourse where a portable SARA can be installed, as at PHL and Charlotte Douglas International Airport (CLT), until a more permanent solution can be designed and built.

Provide a Sensory Room in Each Concourse. To provide an experience that meets varying sensory needs, sensory rooms are often designed with equipment that can provide stimulation and relaxation with “cause and effect” actions, such as a panel of buttons that control multiple lights in the room. Padded walls, floors, and climbing equipment can help overexcited children avoid injury and provide a soft surface when someone wants to relax (see Figure 26). In designing and implementing a sensory room, it is beneficial to meet with organizations that represent travelers with hidden disabilities, such as autism, to determine the need and use of sensory rooms and/or quiet areas and their effectiveness. If no sensory room is available, create an area identified as a “quiet” area.

Provide Portable Sensory Rooms. Among the biggest challenges for airports interested in developing a sensory room is finding space in the terminal to house it. One option from Fun and Function is the “Mobile Sensory Room,” a portable sensory space on wheels that gives airports the flexibility to move the unit wherever it’s needed (see Figure 27). Although smaller than a typical sensory room, the Mobile Sensory Room still features interactive equipment and lighting, padded vibroacoustic seating for a calming effect, and a timer and lighting system to prompt travelers once their time in the space is finished.

Provide a Zip-Up Tent or Semi-Portable Room. Other alternative portable solutions include the Zip-Up Tent and the Semi-Portable Room. The Tent is slightly larger than the mobile room, yet it is still compact and can be rolled up then wheeled out. It is large enough to

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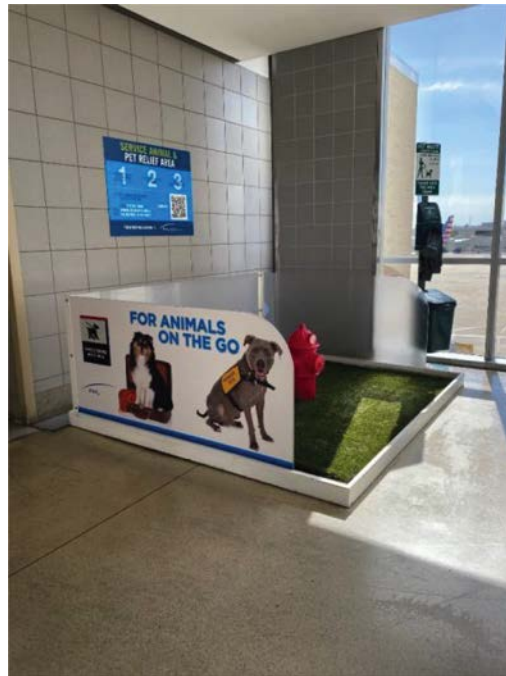


Figure 25. SARA at PHL.



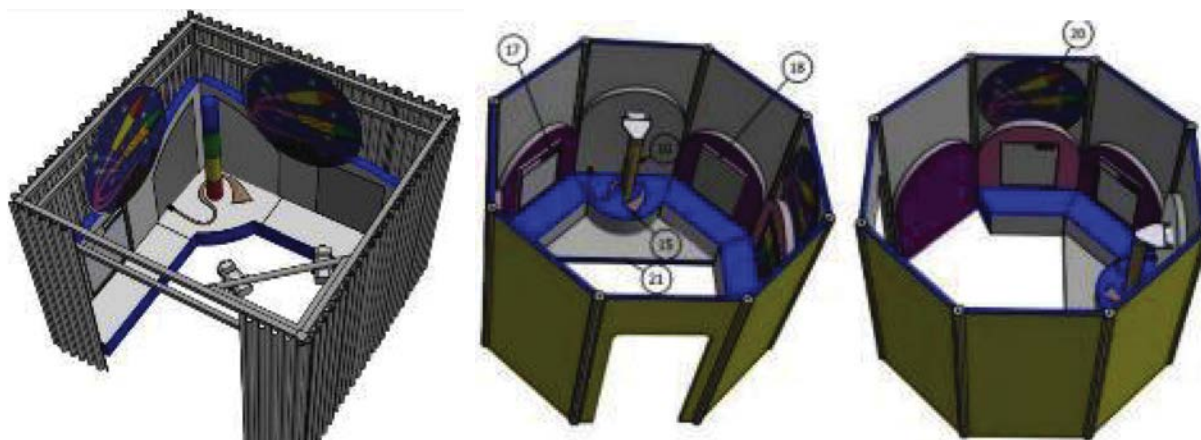
Source: Davis 2019.

Figure 26. Sensory room at PIT.



Source: Fun and Function n.d.

Figure 27. Fun and Function mobile sensory room.



Source: Fun and Function 2020.

Figure 28. Semi-portable room examples.

provide open floor space and padded mats for users, in addition to interactive sensory equipment. The Semi-Portable Room is a solid construction of wood and SensaSoft walls with fitted wheels, but it can be easily dismantled and moved. These spaces are even larger than the Tent, providing more opportunities to meet both the stimulation and relaxation needs of different travelers. Figure 28 provides several examples of these semi-portable rooms.






Provide a Quiet Area or Room in Each Concourse. A quiet area or room is more of a calming retreat for travelers needing a break from the airport environment. Quiet rooms are more beneficial to people with dementia, those with travel-related anxiety, and anyone in need of a break from the active airport environment. PHL welcomes travelers in need of a calming space to a Quiet Room designated for solitude and prayer (see Figure 29). According to a press release from PHL, the room is designed with a dandelion flower pattern because “the dandelion flower can thrive in difficult conditions” and because “some say it symbolizes healing from emotional and physical injury alike and the ability to rise above life’s challenges” (Philadelphia International Airport 2018). The Quiet Room is also equipped with a foot bath for travelers who require cleansing before prayer (Sasko 2018).

Provide Wheelchairs for Loan/Self-Assistance. Provide wheelchairs for rent/loan, as described in Section 5.2.1.



Source: Phillymag.com.

Figure 29. PHL's Quiet Room.

Assessment Tools to Evaluate Equipment Accessibility and Accessible Airport Features	
	<ul style="list-style-type: none"> ○ Comment/feedback tracking—customer feedback via website, social media, comment cards, observation.
	<ul style="list-style-type: none"> ○ Usage data—of amenities and equipment.
	<p>Other tools, such as</p> <ul style="list-style-type: none"> ○ Self-assessment with people with disabilities and ○ Shadowing/“lived experience.”
	<ul style="list-style-type: none"> ○ Internal audit—such as wayfinding and accessibility audit.
	<ul style="list-style-type: none"> ○ Customer satisfaction surveys—such as end-of-use surveys.

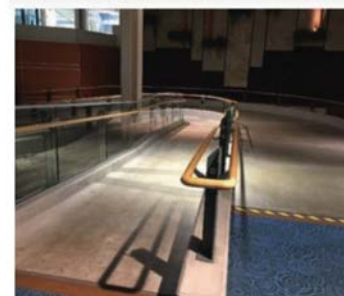
7.5 Mini Case Study

MINI CASE STUDY: VANCOUVER INTERNATIONAL AIRPORT ACCESSIBILITY

Example of commitment to facility accessibility through Universal Design

Region: Canada

Vancouver International Airport (YVR) has been a proponent of Universal Design (UD) for over 20 years, incorporating UD standards into new construction and improvements to existing facilities and services since the airport was built in 1995. YVR has historically exceeded code minimums for supporting passenger wayfinding with the intent to help passengers orient themselves intuitively with minimal reliance on signage. This is in addition to a terminal layout that minimizes walking distances along with a UD approach to lighting, millwork, flooring and other finishes. A detailed list of the accessibility and UD features at YVR can be found in Chapter 11 in *ACRP Research Report 210*.



Pedestrian and electric cart ramp at YVR

Recognizing the airport's commitment to accessibility, the Rick Hansen Foundation (RHF) in 2018 awarded YVR with the first Accessibility Certified Gold rating, the highest rating in the Rick Hansen Foundation Accessibility Certification Program (RHFAC). The RHFAC is the first program to measure the level of meaningful access beyond building code and is based upon the holistic user experience of people with varying disabilities affecting their mobility, vision and hearing. As of 2021, over 1,350 sites have been rated by the RHF (Hansen, 2021).

A number of accessibility features were identified as leading to YVR's Gold rating including:

- Universal food and service counters for people using wheeled mobility devices
- Low-resistance carpeting for easier movement and greater stability
- Textured terminal flooring to assist with wayfinding
- Curbside ramps and assistance
- Accessible parking in all lots with accessible bus service to long-term parking
- Universal seating throughout the terminal
- Universally accessible washrooms
- Pet relief areas for individuals traveling with assistance animals
- Adaptive speakers throughout the terminal building
- Clearly marked signage and wayfinding

Implementation Plan

Customer needs at each journey point vary depending on the category of disability or functional limitation, level of disability, and need for assistance. As the “social model” of disability makes clear, how well one can function and whether one will need assistance also depends on the environment, not just the capacity of the individual. Despite efforts by the industry to cater to the needs of disability and older adult markets, this research concluded that airport programs/services for these groups still fall short of meeting traveler needs, and specific assessment tools to evaluate their effectiveness are still lacking. Further support is provided by the 2019 *IATA Global Passenger Survey*, which measured customer satisfaction among travelers with disabilities for the first time. No matter how low the satisfaction rate for passengers in general, the rate for those with disabilities was even lower, as depicted in Figure 30. This fact is further indication that more needs to be done to meet the needs of this traveler group.

The notable airport programs, services, and practices presented in preceding chapters were developed based on a comprehensive analysis of the needs of different segments of travelers with disabilities and older adults garnered through the research. The assessment tools provided in this Guide can help airports monitor and evaluate these programs, services, and practices, as well as make any necessary adjustments to enhance the experience for travelers with disabilities or functional limitations due to age. The next step is to put these programs, services, and assessment tools into practice.

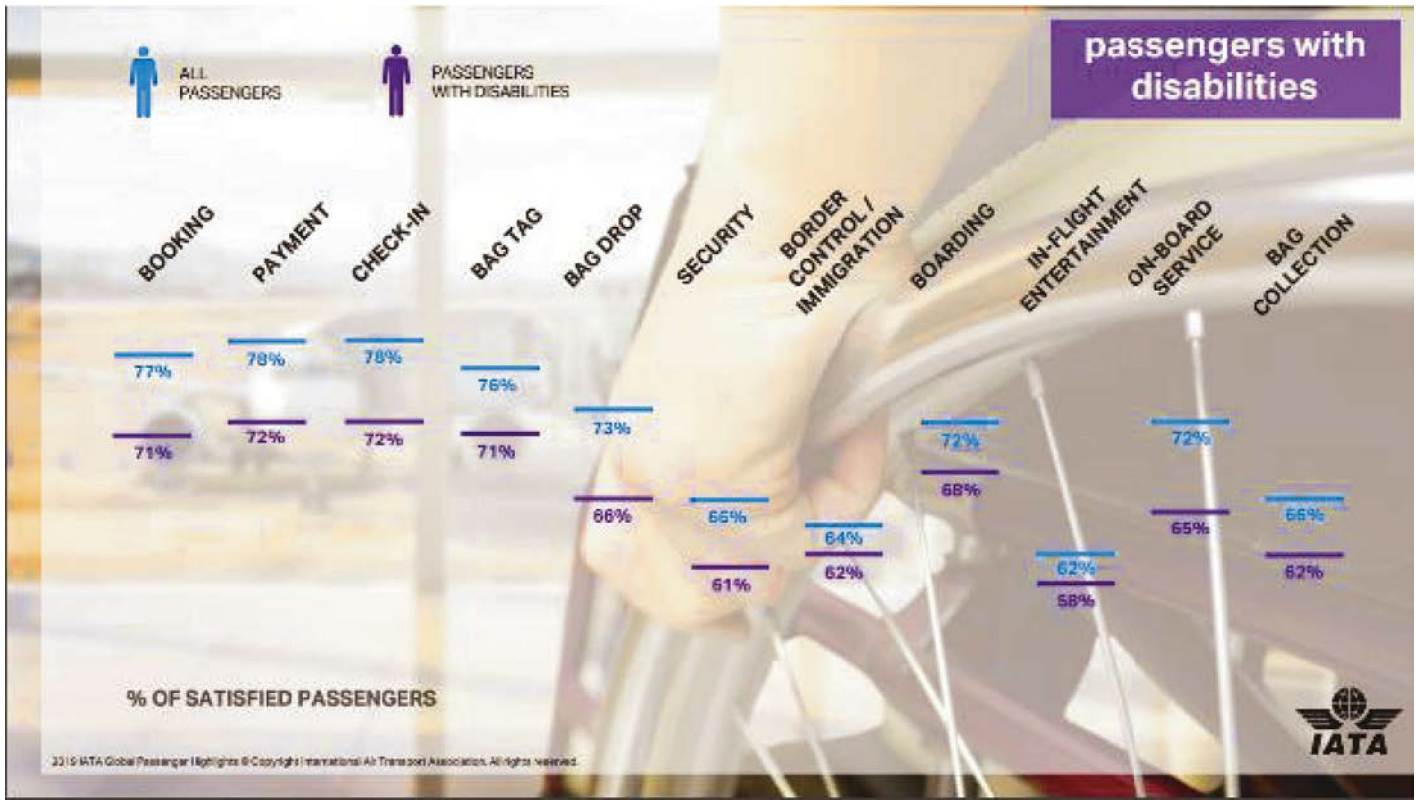
This chapter provides further guidelines on implementing the notable practices and assessment tools identified in the Guide, including sample benchmarks that may be used to measure the effectiveness of the suggested practices.

8.1 Guidelines for Implementing Research Findings

This section summarizes the notable practices presented in the Guide and provides guidelines on developing goals and benchmarks to measure progress towards achieving accessibility and inclusion at the airport.

8.1.1 Summary of Notable Practices Identified in this Guide

Each airport has varied needs and different resources and circumstances (demographics, size, traffic patterns, etc.). Therefore, it is difficult to estimate the costs of implementation for the notable practices and guidelines provided in this Guide. However, a summary of the notable practices presented in the Guide has been provided in Table 4. These have been organized according to the categories established in the Guide and further classified by illustrative goals. By first establishing goals based on the airport’s current circumstances, the airport can then identify the most appropriate actions and practices to implement to achieve them.



Source: International Air Transport Association 2019.

Figure 30. Passengers with disabilities: Percentage of satisfied customers.

Notable Practices

Table 4. Potential impact of initiatives on the experiences of travelers with disabilities and older adults.

Airport Commitment and Strategy	
Sample Goals	Notable Practices
1. Airport-wide accessibility and collaborative decision-making.	<ul style="list-style-type: none"> a. Align reporting structure and coordination of CX and accessibility activities. b. Consider all travelers in program design and implementation. c. Align airport-wide CX standards for all traveler segments. d. Integrate goals of CX/CS department/divisions with committee and ADA advisory committee goals. e. Establish external ADA committees involving community members with disabilities, airlines, service companies, and TSA. f. Commit to hiring employees with disabilities at the airport. g. Implement SLAs with key business partners and third-party service providers.
2. Improve the overall experience for travelers with disabilities and older adults.	<ul style="list-style-type: none"> a. Collaborate with the disability community and service animal organizations to gather feedback and involvement as needed to achieve goals. b. Collect demographics/data on travelers with disabilities and older adults to better understand how to respond to their needs. c. Create uniforms, buttons, or identification of CX airport staff and volunteers so they are easily identifiable. d. Require English proficiency when hiring front-facing staff. e. Collaborate with airlines and/or create an information-sharing standard with the request that airlines provide real-time information on the types of travelers requiring assistance to help the airport plan for these travelers.

Table 4. (Continued).

Airport Commitment and Strategy	
Sample Goals	Notable Practices
3. Highly engaged airport employees.	<ul style="list-style-type: none"> a. Reward all staff/volunteers for providing outstanding assistance to travelers with disabilities and older adults through established reward and recognition programs. b. Provide accessibility/disability awareness training to airport staff and offer the training to business partners, airlines, TSA, and Customs and Border Protection.
Key Business Partners and Airport Staff Services	
Sample Goals	Notable Practices
1. Adequate and satisfactory assistive services available to address the needs of travelers with disabilities and older adults.	<ul style="list-style-type: none"> a. Provide assistive services between points of arrival and the terminal entrance. b. Provide differentiated assistive services for travelers with different types of disabilities.
2. Improve accessibility and provide equal access to all amenities and services.	<ul style="list-style-type: none"> a. Provide airport-wide assistive programs, such as service animal programs, therapy dog programs, hidden disability lanyard programs, and familiarization programs. b. Work with third-party service providers to ensure that services such as concessions, amenities, educational/museum opportunities, and airport celebratory events are accessible to travelers with disabilities and older adults.
3. Improved collaboration with business partners and service providers.	<ul style="list-style-type: none"> a. Improve predictability of wait times at different journey points. b. Coordinate requested assistive services between airports, airlines, and third-party partners. c. Meet with business partners regularly to ensure that all services and amenities provided are properly maintained. d. Create standardized SLAs with business partners and service providers to ensure that adequate services are provided. e. Request projections from airlines on the number of customers using wheelchairs. f. Share information on accessibility issues through bulletins and departmental meetings. g. Include stakeholders in external disability advisory board/committee meetings. h. Facilitate less formal communication, particularly at smaller airports.
Effective Communication	
Sample Goals	Notable Practices
1. Fully accessible website and app (if applicable).	<ul style="list-style-type: none"> a. Provide directions on multiple channels for obtaining pre-trip information for travelers with disabilities and older adults. b. Provide links to accessible transportation providers on websites and mobile applications. c. Provide links to contact information for individuals who may assist passengers with airline accessibility. d. Provide links to federal regulations, including ADA and ACAA, as well as to TSA. e. Use current WCAG standards for websites and mobile applications. f. Provide training on the basics of web accessibility for travelers with disabilities to anyone developing website content at the airport. g. Provide a website accessibility statement at the bottom of the home page with a link to report any problems.
2. Improved communication with travelers with disabilities and older adults.	<ul style="list-style-type: none"> a. Develop and implement a CX/CS/accessibility communications plan that includes all channels, especially social media, and addresses all customers' needs for information through a variety of modalities. b. Provide information on how to get assistance on arrival from ground transportation. c. Provide a foreign language option on the website for non-English speakers to select an alternative language. d. Assign a specific person/division to respond to an airport contact number, including after-hours. e. Provide assistance-related information at information desks. f. Provide courtesy phones, where travelers can connect with someone for assistance, throughout terminals, parking lots, and rental car lots.

(continued on next page)

Table 4. (Continued).

Effective Communication	
Sample Goals	Notable Practices
3. Provide technology and employ other strategies to communicate with and ease navigation for travelers with disabilities and older adults.	<ul style="list-style-type: none"> a. For travelers with hearing loss, include information on how to communicate by text or email as well as TTY and video relay. b. For travelers with vision loss, include a text map describing the airport's overall layout, location of airline check-in counters, security checkpoints, concourses, etc. c. For travelers with cognitive or developmental disabilities, provide social stories or apps to prepare these travelers for the airport experience and use at the airport. d. Provide hearing loops, VRI, and other accommodations for travelers with hearing loss. e. Ensure there is visual information integrated in terminal design.
4. Enhance signage systems to improve navigation for travelers with disabilities and older adults.	<ul style="list-style-type: none"> a. Provide exact locations of disability-related amenities. b. Provide information on walk times, distances from curbs to check-in, and distances from security to gates. c. Employ wayfinding technologies for all passengers with disabilities. d. Provide informational videos in sign languages. e. Enhance signage systems to improve navigation for travelers with disabilities and older adults.
Facility Accessibility	
Sample Goals	Notable Practices
1. Improve access to the terminal from arrival points.	<ul style="list-style-type: none"> a. Designate pickup/drop-off areas for travelers needing assistance. b. Provide travelers with means to request assistance on arrival.
2. Improve layout and design features, where possible, to improve accessibility.	<ul style="list-style-type: none"> a. Employ UD standards. b. Design tile patterns and textured flooring that lead travelers on a particular path. c. Use high-contrast colors and adequate lighting. d. Colocate elevators and escalators for enhanced safety. e. Identify and minimize unpleasant sensory experiences (sound, lighting, etc.). f. Create a design standards manual, in collaboration with internal stakeholders and travelers with disabilities, to be provided to concessionaires, vendors, and contractors. g. Provide accessible kiosks. h. Provide additional seating throughout the journey. i. Provide SARAs before and after security. j. Provide sensory or quiet rooms. k. Provide wheelchair loan services. l. Provide adult changing facilities pre- and post-security.
3. Improve transport accessibility.	<ul style="list-style-type: none"> a. Ensure accessible transportation is readily available for travelers (TNCs, taxis, hotel shuttles, etc.).

It is important to note that top-performing CX/CS airports that are also accessibility champions have already moved to more strategic, holistic, and inclusionary approaches to CX management airport-wide, and many of the notable practices and assessment tools in this Guide are already in place at these airports. Other airports are also moving in the same direction, in steps or stages, as executive commitment, funds, and staff become more available. For these airports, especially those that do not require a lot of funding or additional staff, the guidelines included herein that apply to their current reality may be implemented on a prioritized basis, in a manner that is centered on their travelers' needs. Each airport has its own set of priorities; therefore, implementation of notable practices must be determined by the individual airport based on time and resources available.

8.1.2 Key Considerations in Implementing Notable Practices

The following subsections cover key considerations for implementing notable practices.

8.1.2.1 A Commitment to Airport-Wide Accessibility by Executive Leadership is Necessary

Once a broader airport commitment to disability inclusion has been made, specific areas such as integration/synchronization of airport-wide CX/CS standards and programs with accessibility services, ADA compliance and assessments, digital accessibility, facility accessibility, wayfinding, technology strategies, airport-wide disability awareness training, collaboration with key stakeholders, and communication with the airport public and its stakeholders can be addressed in a more impactful way.

8.1.2.2 Develop a Comprehensive CX Performance Management Plan to Evaluate Program Effectiveness

Performance management practices are critical to measure the effectiveness of airport programs and services. A robust CX Performance Management Plan should

- Be customer-focused;
- Involve regularly scheduled collaboration with business partners; and
- Include all the important internal organizational elements, such as reward and recognition programs that include a specific focus on excellent assistance for travelers with disabilities and older adults.



Specific goals for improving airport accessibility should be established, with benchmarks and KPIs to measure progress towards achieving these goals. The most appropriate assessment tools can then be identified to collect the necessary data. The mix of assessment tools and the importance placed on one type of tool versus another varies from airport to airport based on many factors, including size, budget, and airport culture.

8.1.2.3 Improve Collaboration with Key Stakeholders

All stakeholders must understand the importance of their role in the airport ecosystem and uphold service standards. Even though the airport may not be directly responsible for certain programs/services, it is still responsible for spearheading the establishment of service standards, beyond those mandated by ADA Accessibility Standards, and for ensuring that service providers achieve service-level standards set in collaboration with the airport community (Baust 2017).

Common goals/objectives and enhanced communication and collaboration among the airport and its key business partners (including airlines and third-party service providers) are critical to delivering a seamless CX. In all collaboration, input from disability and older adult communities is fundamental to achieving the most equitable and inclusive outcomes.

8.1.2.4 Prepare a Comprehensive Communication Strategy for Travelers with Disabilities and Older Adults Requiring Additional Assistance

Communication needs among travelers with disabilities and older adults can vary depending on type of disability and age. Therefore, it is important to develop a focused communication strategy targeting these groups of travelers to ensure all communications are adequately conveyed and received. Ensuring the accessibility of information and resources on the airport website and apps (i.e., ensuring they meet current WCAG) as well as the availability of email, text messaging, and chat line services is critical to helping these travelers prepare for upcoming travel.

8.1.2.5 Airport Layout and Design Should Exceed Minimum ADA Standards and Focus on UD

The ADA Accessibility Standards focus primarily on physical accessibility, leaving out in particular the needs of individuals with cognitive and sensory disabilities. UD standards can address many of these gaps by encompassing the needs of people with all disability types so that most individuals, regardless of limitation or size, can function independently in the current environment and can independently navigate their environment. Additional services, whether from the airport itself or other stakeholders, will still be needed for individuals with more restrictive disabilities.

8.1.3 Identify Priorities and Measure Impacts Associated with Implementation of the Findings

There is no one common methodology for resolving the issues facing travelers with disabilities and older adults since every airport is different. Therefore, airports must select options from the notable practices that match their specific demographics, customer base, available resources, and characteristics of traffic and region. Figure 31 provides a methodology for airports to select the most appropriate programs/services, which begins with

- Establishing goals to align the CX for all travelers, including those with disabilities and older adults;
- Identifying gaps;
- Establishing benchmarks/KPIs;
- Identifying enhanced programs and services by using notable practices listed in Table 4 as a guide;
- Identifying assessment tools by listening to the voices of target groups, implementing actions based on those findings, and using Table 5 as a guide;
- Monitoring and assessing progress/impact of enhanced or new programs and services; and
- Preparing a continuous improvement action plan to close gaps and prioritize initiatives.

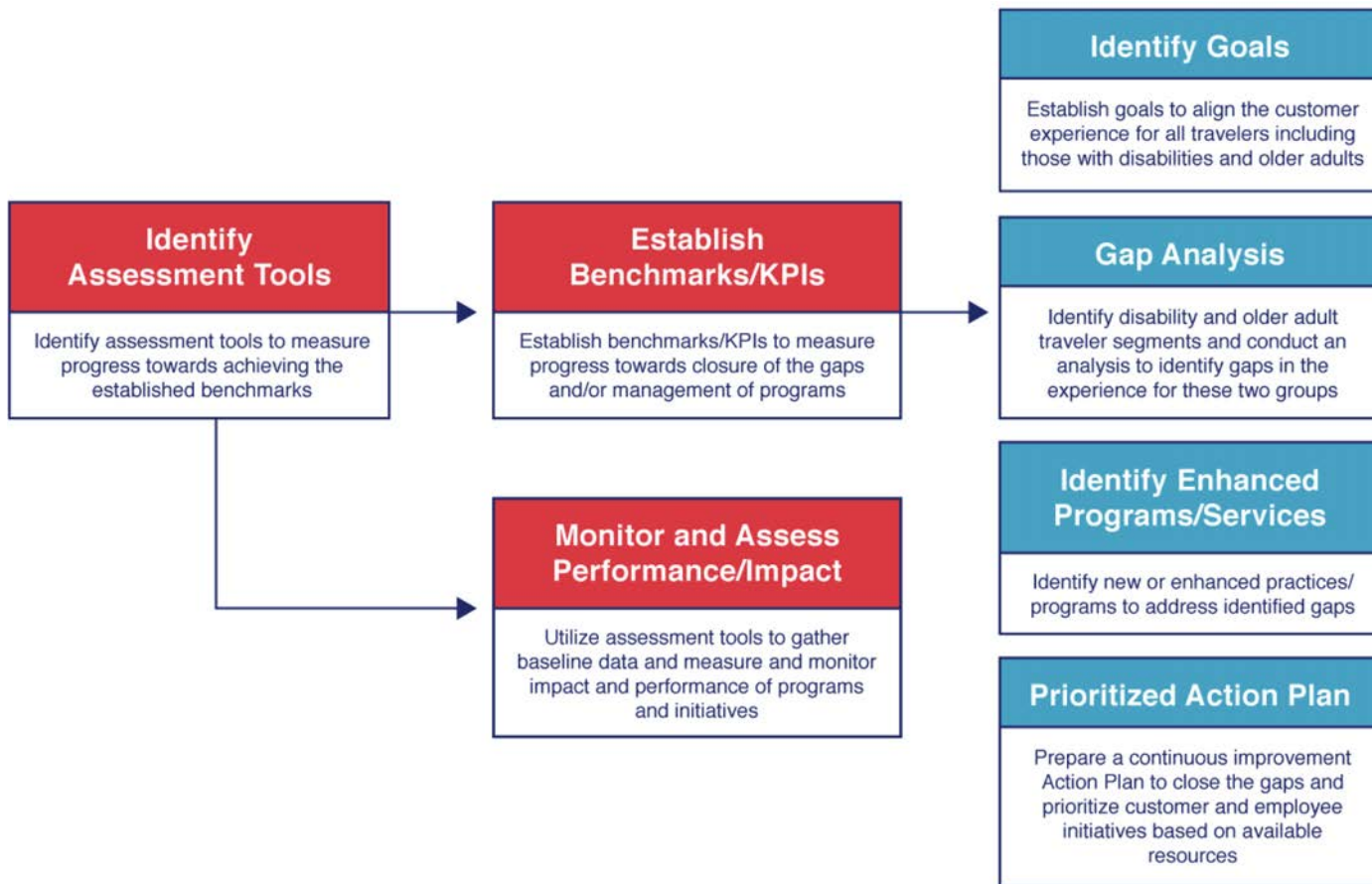


Figure 31. Methodology for identifying appropriate programs/services and assessment tools that measure their impact.

Table 5. Sample goals, benchmarks, and assessment tools to measure the impact of programs/services.

Sample Goals	Sample Benchmarks	Assessment Tools
Airport Commitment and Strategy		
1. Airport-wide accessibility and collaborative decision-making.	<ul style="list-style-type: none"> • Commitment to accessibility actively demonstrated by executive leadership. • Specific service standards established for travelers with disabilities and older adults. • Service standards for travelers with disabilities and older adults aligned with overall CX service standards. • Reporting structure of ADA coordinator aligned with that of the CX department. • CX/CS department, divisions, or committees integrated with ADA advisory committees. • Increased collaboration with the disability community through establishment of an ADA committee or informal consultations. • Target percentage of older adult employees and employees with disabilities. 	<ul style="list-style-type: none"> ✓ Internal audits/inspections. ✓ Employee engagement surveys. ✓ Reward and recognition programs.

(continued on next page)

Table 5. (Continued).































Sample Goals	Sample Benchmarks	Assessment Tools
Airport Commitment and Strategy		
2. Improve the overall experience for travelers with disabilities and older adults.	Track the disability and older adult category scores for the following: <ul style="list-style-type: none"> • Annual customer satisfaction scores, • Quarterly sentiment scores on social media, and • Quarterly NPS. 	<ul style="list-style-type: none">  Customer feedback.  Audits/self-evaluation.  Focus groups and intercept interviews.  Customer satisfaction surveys.  Feedback from community.  Disability:IN's DEI.  Employee engagement surveys.
3. Highly engaged airport employees.	<ul style="list-style-type: none"> • Improvement in annual employee NPS. • Improvement in annual employee engagement scores. • Increased participation rate in engagement efforts (e.g., pulse survey) annually. • All front-facing staff trained in disability awareness and customer service at least annually. 	<ul style="list-style-type: none">  Employee engagement survey scores and employee NPS.  Reward and recognition programs.
Key Business Partners and Airport Staff Services		
1. Adequate and satisfactory assistive services available to address the needs of travelers with disabilities and older adults.	<ul style="list-style-type: none"> • Improved wait times for assistive service at different journey points. • SLAs include language on service standards for travelers with disabilities and older adults. • All front-facing staff, including staff from third-party providers, receive disability awareness training on at least an annual basis. 	<ul style="list-style-type: none">  Customer feedback.  Focus groups and intercept interviews.  Usage data.  Customer satisfaction surveys, such as end-of-use surveys.  Time and motion study.  Mystery shopping.  Shadowing“lived experience.”
2. Improve accessibility and provide equal access to all amenities and services.	<ul style="list-style-type: none"> • Amenities and services to meet needs identified by travelers with disabilities and older adults are in place. • Minimum accessibility standards are met by service providers. 	<ul style="list-style-type: none">  Customer feedback.  Focus groups and intercept interviews.  Customer satisfaction surveys, such as end-of-use surveys.  Mystery shopping.  Shadowing“lived experience”; accessibility service excellence standards.
3. Improved collaboration with business partners and service providers.	<ul style="list-style-type: none"> • Regular meetings (monthly or quarterly) between all key business partners and service providers. • Regular information sharing (monthly or quarterly) among airport departments and other business partners and service providers. 	<ul style="list-style-type: none">  Time and motion study.  Mystery shopping.  Customer feedback.  Customer satisfaction surveys.
Effective Communication		
1. Fully accessible website and app (if applicable).	<ul style="list-style-type: none"> • Meets WCAG. • U.S. Health and Human Services “Accessibility Compliance Checklist.” • Annual customer satisfaction scores. 	<ul style="list-style-type: none">  Customer feedback.  Usage data.  Customer satisfaction surveys, such as end-of-use surveys.  Feedback from apps and smart solutions.  User testing with travelers with various disabilities; pilot study with local advocacy organization.

Table 5. (Continued).

Sample Goals	Sample Benchmarks	Assessment Tools
Effective Communication		
2. Improved communication with travelers with disabilities and older adults.	<ul style="list-style-type: none"> • CX accessibility communication plan in place. • ICC A117.1-2017 Standard for Accessible and Usable Buildings and Facilities, Section 703.7 (new standards for VMS). • UK CAA CAP1228: <i>Guidance on Quality Standards under Regulation EC 1107/2006</i>. 	<ul style="list-style-type: none"> ✓ Internal audits/inspections. ✗ Feedback from community.
3. Provide technology and employ other strategies to communicate with and ease navigation for travelers with disabilities and older adults.	<ul style="list-style-type: none"> • Annual customer satisfaction scores. • Quarterly sentiment scores on social media. • Quarterly NPS. • Visual navigation technology is in place, such as visual guidance, text maps, and tactile maps. • Hearing loss accommodations, such as hearing loops, are in place. 	<ul style="list-style-type: none"> ☰ Customer satisfaction surveys, such as end-of-use surveys. ✗ Feedback from community. 🗣️ Customer feedback. 📊 Usage data.
4. Enhance signage systems to improve navigation for travelers with disabilities and older adults.	<ul style="list-style-type: none"> • UD principles checklist from <i>ACRP Research Report 177</i>. • Annual customer satisfaction scores. • Quarterly sentiment scores on social media. 	<ul style="list-style-type: none"> ✓ Checklist (<i>ACRP Research Report 177</i>). 🗣️ Focus groups and intercept interviews. 🗣️ Customer feedback. ✗ Feedback from community.
Facility Accessibility		
1. Improve access to the terminal from arrival points.	<ul style="list-style-type: none"> • Annual customer satisfaction scores. • Quarterly sentiment scores on social media. • Quarterly NPS. • Service gap between arrival point and terminal addressed by airport or another provider. 	<ul style="list-style-type: none"> ✓ Internal audits/inspections. 🗣️ Focus groups and intercept interviews. ☰ Customer satisfaction surveys. 🗣️ Customer feedback. ✗ Feedback from community.
2. Improve layout and design features, where possible, to improve accessibility.	<ul style="list-style-type: none"> • Standards in <i>ACRP Research Report 226</i>. • ADA coordinator attends a certain number of design meetings. • UD standards. 	<ul style="list-style-type: none"> ✓ Internal audits/inspections. 🔍 Disability:IN's DEI. 🗣️ Focus groups and intercept interviews. ☰ Customer satisfaction surveys. 🗣️ Customer feedback. ✗ Feedback from community.
3. Improve transport accessibility (TNCs, taxis, hotel shuttles, etc.).	<ul style="list-style-type: none"> • Meet requirements in the FAA's <i>AC 150/5360-14A - Access to Airports by Individuals with Disabilities</i>. • In places where a provider is not required to have its own accessible vehicles, it has an agreement in place with another company to provide accessible service within a reasonable amount of time. • Work with the local authority (city, county, etc.) to establish requirements to ensure the availability of accessible area taxis and shuttles where these are not mandated by federal standards. 	<ul style="list-style-type: none"> 🗣️ Customer feedback. 🗣️ Focus groups and intercept interviews. ☰ Customer satisfaction surveys, such as end-of-use surveys. ✗ Accessibility service excellence standards. 😊 Electronic/static ratings.

8.1.4 Establishing Goals and Benchmarks and Identifying Assessment Tools

Guidelines on benchmarks for measuring progress towards achieving some key elements of accessibility, as well as associated assessment tools, are presented in Table 5. These benchmarks tie in with the goals identified in Table 4. Specific KPIs to measure progress towards achieving established benchmarks need to be developed by airports based on their existing structure. Guidelines for preparing KPIs can be found in Chapter 3 of this Guide and in *ACRP Research Report 231*.

8.2 Conclusion

This Guide has focused on tools to help airports determine the effectiveness of programs offered for travelers with disabilities and older adults. Airport staff must embrace the responsibility for continuing to reach out to their travelers and respective committees to gather feedback from the airport's passengers, including travelers with disabilities and older adults. Business partners must be contacted to enhance existing collaborative efforts to ensure that information provided to the airport public is correct, up to date, and usable in the format provided. A culture of care and concern for travelers with disabilities must exist within all those interfacing with travelers with disabilities and older adults. While methodologies for determining tools for assessing airport programs have been discussed in this Guide, airports must support those assisting travelers with disabilities and older adults with additional resources and training.

Developing a methodology to identify impacts associated with implementation of the findings relates back to understanding and knowing the customer base. Strategic plans must be developed to listen to the voices of the target groups and to implement actions based on those findings. As outlined in the Guide, airports must embrace an ongoing effort to gather information about the effectiveness of programs for travelers with disabilities and older adults. And, just as importantly, airports must take necessary actions to ensure that the entire airport community embraces the concept of responsibility for their individual and collective roles in meeting the needs of their travelers with disabilities and older adults traveling through their airport.



Acronyms and Abbreviations

ACAA	Air Carrier Access Act
ACI	Airports Council International
ADAAG	Americans with Disabilities Act Accessibility Guidelines
ANSI	American National Standards Institute
ASQ	Airport Service Quality (ACI World)
ATL	Hartfield-Jackson Atlanta International Airport
AUS	Austin-Bergstrom International Airport
BIDS	baggage information display screens
BWI	Baltimore/Washington International Thurgood Marshall Airport
CAA	Civil Aviation Authority (United Kingdom)
CS	customer service
CTA	Canada Transport Association
CUSS	common use self-service
CVG	Cincinnati/Northern Kentucky International Airport
CX	customer experience
DEI	Disability Equality Index
DGVE	<i>Design Guidelines for the Visual Environment</i>
FEMA	Federal Emergency Management Agency
FIDS	flight information display screens
GIDS	gate information displays
IAH	Houston George Bush Intercontinental Airport
IATA	International Air Transport Association
IBC	International Building Code
ICAO	International Civil Aviation Organization
IROPS	irregular operations
KPI	key performance indicator
LAX	Los Angeles International Airport
LGW	London Gatwick International Airport
LHR	London Heathrow
MCO	Orlando International Airport
MIA	Miami International Airport
MIAair	MIA Airport Instruction and Readiness
MSP	Minneapolis-St. Paul International Airport
NPS	Net Promoter Score
ODO	Open Doors Organization
ORD	Chicago O'Hare International Airport
PANYNJ	Port Authority of New York and New Jersey
PDX	Portland International Airport

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PHL	Philadelphia International Airport
PIT	Pittsburgh International Airport
PRM	persons with reduced mobility
SARA	Service Animal Relief Area
SEA	Seattle-Tacoma International Airport
SFO	San Francisco International Airport
SJC	San Jose International Airport
SLAs	service-level agreements
SMARTER	specific, measurable, achievable, relevant, time-bound, evaluate, reevaluate/readjust
TNC	transportation network company
TTY	teletypewriter
UD	Universal Design
UK	United Kingdom
VMS	variable message signs
VRI	video remote interpreting
W3C	World Wide Web Consortium
WCAG	Web Content Accessibility Guidelines
YVR	Vancouver International Airport
YWG	Winnipeg James Armstrong Richardson International Airport



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APPENDIX A

Additional Resources for Market Segmentation

This subsection presents several resources and references to consider in segmenting the disability market for air travel.

ACI Europe’s *Guidelines for Passenger Services at European Airports: The Passenger at the Heart of the Airport Business* (ACI Europe 2014) discusses the use of a Multidimensional Model of Passenger Categorization, as shown in Figure A-1.

In this Multidimensional Model, as the ACI Europe report explains:

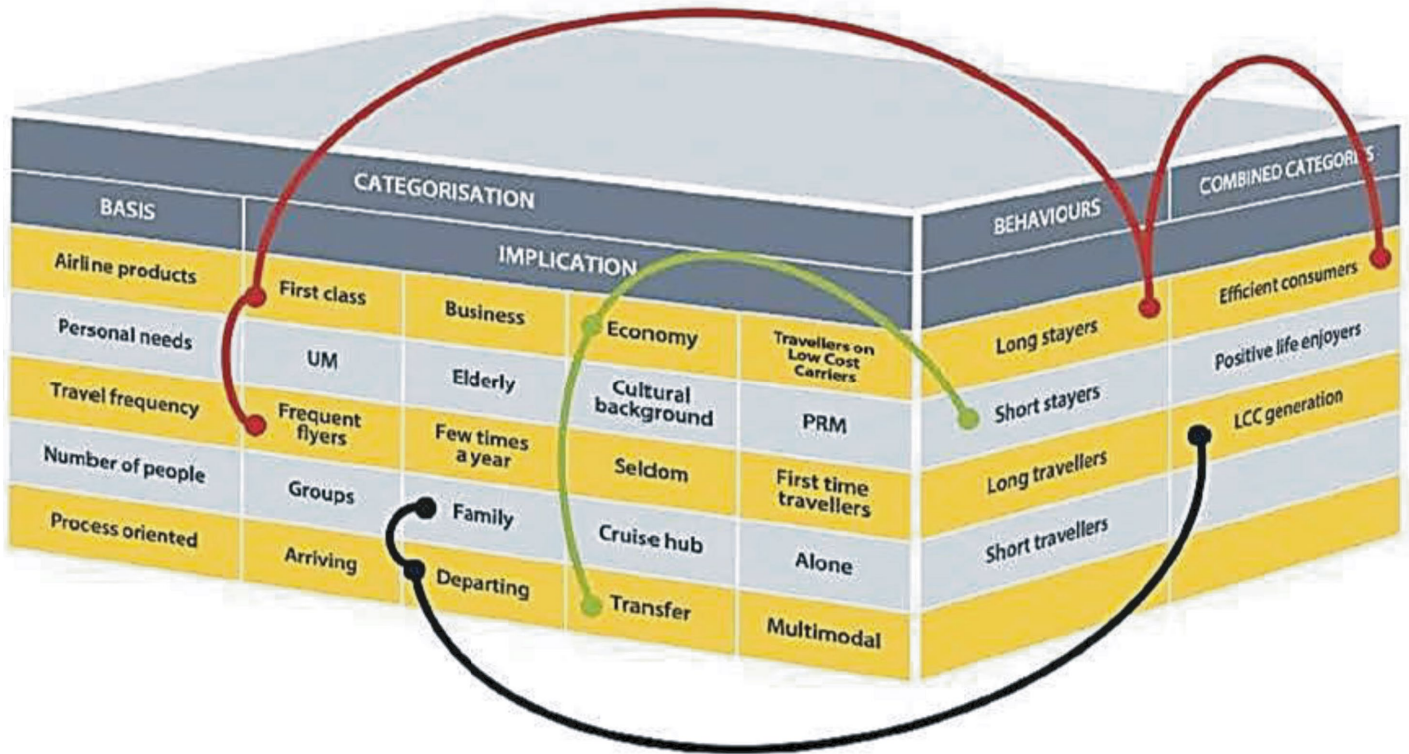
Any of the mapped attributes can be interrelated and are linked to the more usual passenger profile attributes: age, gender, education, occupation, reason to travel, domicile, etc. Each Airport Managing Body should analyze its passenger community in order to identify the most suitable model of categorization to describe the main demand profiles that describe more properly the reference market (ACI Europe 2014, p. 26).

Next, customer needs and expectations for each established category or segment must be analyzed with the goal of creating a pyramid that models what is “required,” “expected” and “valued.” An example of the resulting pyramid is shown in Figure A-2 below.

An analysis of the older adult travel market has been conducted in a report entitled *Enhancing the Passenger Experience for a Growing Number of Elderly Travelers* (Hentschel and Hagmaier 2015). It uses the methodology of ACI Europe’s Guidelines report to create first a Passenger Segmentation for Older Travelers (shown in Figure A-3), an analysis of their problems and challenges, and a Pyramid (Figure A-4) reflecting needs and expectations for each journey segment viewed from the perspective of the “three Ps” (“Premises,” “Processes” and “People”) to address customer needs and expectations at each journey point.

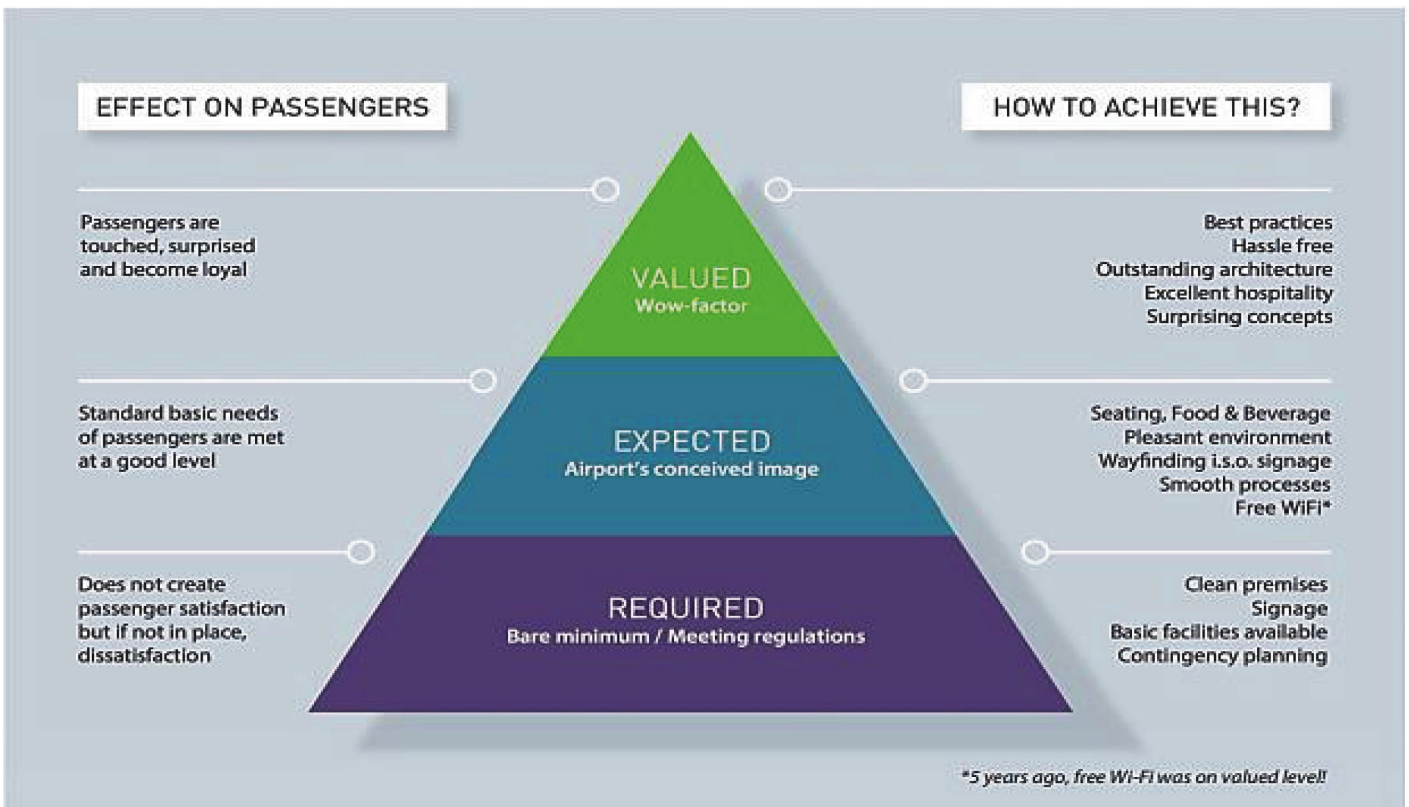
Other key sources for segmentation and customer experience include:

- *ACRP Report 157: Improving the Airport Customer Experience* (Boudreau et al. 2016),
- *ACRP Research Report 161: Guidelines for Improving Airport Services for International Customers* (Landrum & Brown Inc. 2016), and
- *ACRP Research Report 231: Evaluating the Traveler’s Perspective to Improve the Airport Customer Experience* (Ryan et al. 2021).



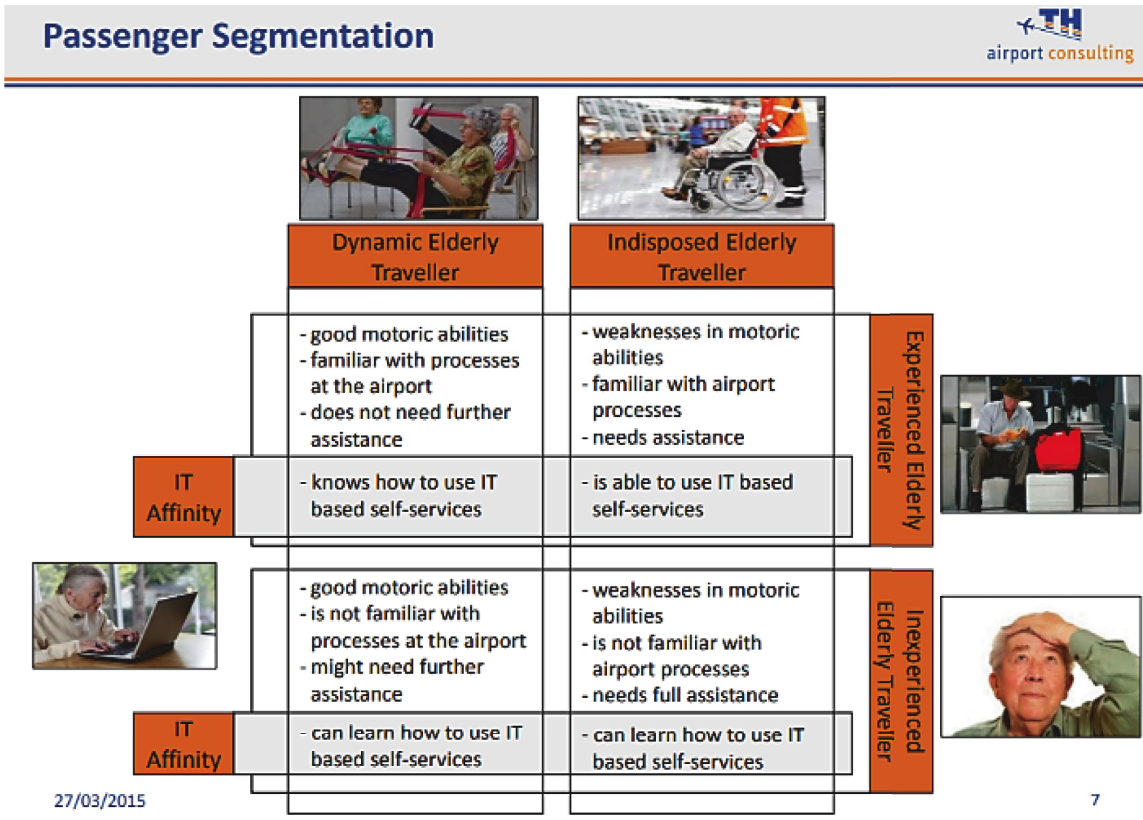
Source: ACI Europe 2014, p. 26.

Figure A-1. Passenger Categorization: The Multidimensional Model.



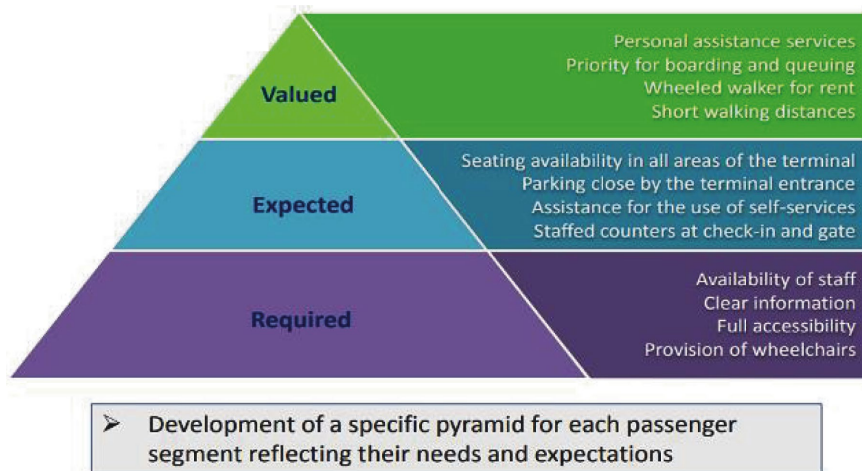
Source: ACI Europe 2014, p. 64.

Figure A-2. Pyramid of passenger perception levels.



Source: Hentschel and Hagmaier, 2015.

Figure A-3. Passenger segmentation using premises, processes and people.



Source: Hentschel and Hagmaier, 2015, p. 9.

Figure A-4. Sample pyramid for older travelers.

Additional Resources for Managing Emergency Events

1. *ACRP Synthesis 56: Understanding the Value of Social Media at Airports for Customer Engagement* describes how social media platforms are being used by airport operators to manage crisis events, such as flight delays related to weather and airport closures resulting from aircraft incidents (Perry et al. 2014).
2. *ACRP Research Report 170: Guidebook for Preparing Public Notification Programs at Airports* addresses all types of notifications and includes tools and resources to help airports design a program specific to their needs. ADA requirements are noted on each checklist (de Rodriguez et al. 2017).
3. The *Evacuation of People with Disability & Emergent Limitations: Considerations for Safer Buildings & Efficient Evacuations* guidebook is a comprehensive resource that details how the needs of people with disabilities should be addressed when planning for emergency situations. The following excerpts are directly from the guidebook and can be applied to this research. In discussing the types of accommodations necessary for people with disabilities, Wilson (2016) states

Some general accommodations can be made to improve the level of safety during an evacuation include providing writing instruments, communication systems, respirator masks, work gloves to protect hands when pushing a wheelchair through debris on a path to an exit in the egress path. Furthermore, good housekeeping is recommended to remove physical barriers such as boxes, furniture or the like from egress routes.

To meet the varying communication limitations among people with disabilities, particularly those with vision loss, hearing loss, and cognitive disabilities, Wilson (2016) states

Suitable forms of communications in an emergency include early warning and intercommunication/occupant warning systems, visual and tactile signals, telephones, two-way radios, paging systems, public address systems and the use of runners. . . .

Digital signage has been described as one of the 'most highly effective visual tools for use in emergency response because the important message gets delivered quickly, via highly visible medium' (Mvix 2016). Display location boards, advertising signs, or television screen displayed in already prominent locations in public spaces offer an effective method of complementing any existing emergency planning and evacuation procedures. The drawback with such a system is they are based on visual information, so any information provided in a visual manner must be reinforced with an audible equivalent, or providing written captions (also referred to as same language subtitles) which explain the scenario and emergency procedures.

Additional accommodations and services were also identified, including

- Audio recordings of emergency information;
- Qualified interpreters, including sign language interpreters;
- Oral interpreters;
- Cued-speech interpreters or tactile interpreters;
- Printed scripts of emergency messages;

- Assistive listening systems;
 - Devices such as hearing/induction loop systems; and
 - Text and video-based telecommunications.
4. *ACRP Report 65: Guidebook for Airport Irregular Operations (IROPS) Contingency Planning* identifies five areas of need for passengers in an emergency or IROPS situation, including up-to-date information, food and water, safe and secure facilities (including clean restrooms on board an aircraft and in an airport terminal), special services (including services for special needs passengers and ground transportation), and lodging for extended stays. Significant disruptions to airline schedules or operations can adversely impact the experiences of passengers and their overall satisfaction with the air transportation system (Nash et al. 2012).
 5. Chapter 6.9 of *ACRP Research Report 210: Innovative Solutions to Facilitate Accessibility for Airport Travelers with Disabilities* discusses emergencies and IROPS at length, including evacuation equipment, requirements for “Areas of Rescue Assistance,” and communications that help prepare travelers in case of an emergency (Van Horn et al. 2020).

Key Terms and Definitions

Key Term	Definition
Accessibility	The path from the arrival at the airport, from any mode, to entry to and through the terminal for departure or arrival is available to all travelers, including travelers with disabilities and older adults. Facility, ground transportation, parking, transport mode, security, gate, concessions, amenities, airline.
Americans with Disabilities Act (ADA)	Mandates airlines and airports to provide assistance to those with disabilities.
Apps	Available applications on phones for easy access to information, such as airport apps, airline apps, mobile apps, Avius, Corada BlueDAG software, Ozion PRM Manager software.
Assessment tool	A tool or activity that assists in determining whether an action, process, or procedure meets the expectations of the user. Examples are customer feedback; focus groups; electronic rating systems; usage data; Disability Equality Index; reward and recognition programs; standards certifications, such as Airport Service Quality, J.D. Power, and Rick Hansen Foundation; audits; checklists; mystery shopping; and employee engagement surveys.
Assistive services	Term for services that can provide a wide range of help for travelers, such as wheelchairs, technology, volunteers, designated customer experience staff, service animal programs, therapy dog programs, hidden disability lanyard programs.
Collaboration	Airports, concessions, business partners, and airlines working together to seek agreement and improve customer experience.
Customer-centric	People and airports who are focused on the customer as the center of all decisions and activities, and as a result provide a positive customer experience and customer service.
Customer experience (CX)	The expectations versus actual sequence of events, actions, or sensations that customers feel as they travel through the airport, including disappointment, happiness, sadness, frustration, anger, and joy.
Disability	A physical or mental impairment that, on a permanent or temporary basis, substantially limits one or more major life activities, has a record of such an impairment, or is regarded as having such impairment.
Electronic rating system	A means of providing customers a way to communicate their satisfaction with services, processes, or procedures through a device, software, and/or mobile devices.
Employee engagement	Inviting employees to provide their input, opinions, suggestions, and ideas on topics of interest through various modes of activity, such as employee engagement surveys, meetings, customers, and reward and recognition programs.
Fulfilling basic needs	Fulfilling basic needs for airport customers means providing them with clean facilities, food choices, internet connection, resting areas, and a sense of safety and security.
Fulfilling specific needs	Airport customers with specific needs may include mothers, children, babies/infants, nursing mothers, pets such as dogs or cats, autistic travelers, wheelchair users, persons with disabilities or illnesses, and older adults.
Ground transportation	Mode of travel from original destination to or from the airport, including taxis, transportation network companies, hotel shuttles, airport shuttles, parking shuttles, private transport, trains, buses, and rental cars.

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Irregular operations (IROPS)	Irregular operations are unexpected, unanticipated weather events and other emergencies that must be handled by the airport using an airport emergency plan, incident notification, and emergency communication.
Interacting with employees	Employee, employees, staff, people, assist, assisted, assisting, help, helped, helping, helpful, call, called, email, said, say, service, customer service, customer experience, timely, polite, answers, questions, answered questions, assistance, assisted, friendly, inform, knowledgeable, rushed, rude, workers.
Key performance indicators (KPIs)	Support established benchmarks with specific standards that have determined outcomes to be achieved.
Market/traveler segmentation	A way to differentiate the reasons for flying or demographics or characteristics of travelers in the airport marketplace, which include leisure, business, student, families with children, couples, military, international, domestic, urgent, loyalty, budget conscious, luxury preference, solo, non-native English speakers, disabilities, older adults, and infrequent.
Mystery shopping	Airport mystery shoppers are shoppers hired to rate the customer experience service who do not reveal their intent to the people with whom they interact and/or shop.
Notable practices	Best practices.
Performance management	A structured approach to determining the efficiency or effectiveness of an activity, benchmarking, KPIs, or employee assessments; measuring, monitoring, and managing the performance of the airport on a regular basis.
Persons with disabilities	Anyone who is temporarily or permanently disabled; they may have blindness or low vision, reduced mobility, cognitive issues, autism, illness, or other conditions.
Persons with Reduced Mobility (PRM)	PRM is a term largely used in Europe. This is now being replaced by “persons with disabilities” by international travel organizations, including ACI and IATA, as the latter also includes non-mobility-related limitations.
Queuing/Waiting	Employee, employees, staff, people, assist, assisted, assisting, help, helped, helping, helpful, call, called, email, said, say, service, customer service, customer experience, timely, polite, answers, questions, answered questions, assistance, assisted, friendly, inform, knowledgeable, rushed, rude, workers.
Reward and recognition program	An established procedure for determining employees or volunteers of the airport, business partners, or service providers that exceed the passengers’ expectations and recognition at regularly scheduled, airport-wide meetings. Employee, business partner, stakeholder, community, airline, airport
Seeking information	Info, information, guide, sign, signs, signage, read, see, hear, heard, message, seek, obtain, find, easy to seek info, easy to find info, inform.
Service-level agreements (SLAs)	Agreements between the airport and service providers specifying certain performance outcomes with terms and conditions.
Smartphone	Mobile communication device that can be used in airports for navigation, information, wayfinding, technology, contact, and boarding pass.
Smart solutions	A general term for systems that combine innovative technologies, both in terms of hardware and software.
Travel Pulse	Short surveys to gauge current sentiments.
Virtual assistants/robots	Assistive services in which an electronic communication device and/or robot provides information for the airport public. These services may involve multilingual assistants, messaging, information, assistance, robotic communication, and self-service technology.
Virtual focus groups	Meeting conducted in real time with selected participants who may be in various locations connected by video conference technology, such as Zoom, Skype, or Teams.
Wayfinding	Find, finding, way, lost, confusing, confused, sign, signs, signage, map, direction, directions, directory, walk, walking, see, sight, unclear, driving, organized, disorganized, busy, easy, get around, layout, navigate, navigation, organized.

Abbreviations and acronyms used without definitions in TRB publications:

A4A	Airlines for America
AAAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI-NA	Airports Council International-North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAST	Fixing America's Surface Transportation Act (2015)
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GHSA	Governors Highway Safety Association
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
MAP-21	Moving Ahead for Progress in the 21st Century Act (2012)
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S. DOT	United States Department of Transportation

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