

ACCESSIBILITY: SPECIAL NEEDS

How can air travel be made more comfortable for a growing class of passengers with special needs?



CASE STUDIES

■ EXPO 2019: SPECIAL NEEDS



American Airlines



Left: McDonnell Douglas DC10

American Airlines



For families travelling with small children, overcrowded and frenetic check-in and security lines can constitute a hostile environment. What is being done to develop child-friendly approaches to the air travel experience? And for elderly travellers and those with disabilities, a journey by air can be miserable — the difficulties seem to be insurmountable. Airports and airlines need to focus on constantly updating policy codes and training programmes relating to passengers who require special help and consideration.

In the US, since the passing of the Americans with Disabilities Act (ADA) in 1990, there have been great improvements — across the manufacturing, industrial and service sectors — in accessibility, space allowances, reach ranges and special facilities for use by people with disabilities. In public areas, and in recently constructed buildings, installations now generally include:

- passageways and lobbies that can accommodate the turning radius of wheelchairs;
- handrails and safety grab bars on staircases and in corridors;
- doorways that open and close automatically;
- curbside ramps that provide safe access;
- water coolers and drinking fountains at wheelchair height;
- specially equipped toilets, bath tubs and shower stalls;
- signs displaying internationally recognized symbols;
- reserved seating areas near doorways and entrance and exit routes; and
- specially configured platform lifts and elevators.

In addition, special vehicle registration plates are available that designate the status of drivers with disabilities, and there are allocated car-parking spaces. New requirements call for routes to be suitably illuminated, for work-surface heights and clearances to be adjusted according to individual needs, and for 'trip' hazards such as toe-catching projecting overhangs to be eliminated from staircase steps and saddle thresholds (surface-mounted divider strips covering the joins or tiny gaps at doorways).

However, despite the regulatory requirements of the ADA and the provisions of the Air Carrier Access Act, in the field of air travel, the level of dissatisfaction in this area continues to rise. Complaints to the US Department of Transportation from people with disabilities allege air-travel discrimination, and airlines are faced with the possibility of major fines because of their lack of service for these passengers. Main complaints include the failure of airlines to provide wheelchairs as required by law; long waits for wheelchairs; damage to passengers' own wheelchairs; passengers being stranded inside aircraft for extended periods; and even being left at the wrong gate, resulting in missed flights.

When the European Commission and the 28 member companies of the Association of European Airlines announced a new Code of Conduct, the provisions included a commitment 'to help handicapped passengers' and 'to improve assistance to passengers in difficulty'. The overall aim, according to then-Commissioner for Transport, Loyola de Palacio, was 'to change the impression felt by many air passengers that they have been abandoned.'

A number of airlines had already taken significant steps in this direction. As Vern Alg, Senior Manager, Interiors Engineering at Continental, explained: 'In the mid-1990s, we set up an interdepartmental task force to address this issue. Continental recognized that there are, in fact, many customers with disabilities. Although some of the commonly encountered disabilities are clearly visible, many are not so visible. We set out to identify ways in which to work with all these customers. We saw this as our social responsibility. We developed a range of special training material, website information and brochures. From the initial enquiry, the details relating to the individual passenger were noted in the Passenger Name Registration (PNR), the computer reservation entry. On board our aircraft we carried special aisle-size wheelchairs equipped with "slider boards" so that a customer could transfer with the minimum of discomfort from one seat position to another. All our flight attendants received training in how to care for passengers with disabilities.'



Details of developments relating to cabin accessibility are provided in the EXPO 2019: [Special Needs Case Study](#) attached to this Chapter.



Fly Jamaica Airways



Above: Special aisle-size wheelchairs designed and approved for use on board aircraft



Above: The armrests of some aisle-side seats can be raised to help passengers with disabilities gain access to their seat rows more easily.



Above: These onboard wheelchairs can be folded and stowed in the cabin inside a coat closet.



Junkin Safety

PROBLEMS IN THE AIR

In product surveys, mobility-impaired passengers have always complained about aircraft lavatories. Following are some typical comments:

- 'There are never enough lavatories for the number of passengers on the aircraft.'
- 'The lavatories on board are even worse than the ones at the airport.'
- 'They're always too small.'
- 'You need to be a contortionist to get in and out of them.'
- 'I always hit my head on those dreadful curved ceilings.'
- 'Why do they put grab bars at shoulder level, instead of where you need them, when you're actually using the toilet?'
- 'Trying to get back to your seat in the dark is a nightmare. The floor surfaces can be so uneven, with ridges and bumps in the hard bits of linoleum and carpet that feels like chewing gum. There's never anything for me to hang on to when I walk past the galleys and closets.'

With careful thought and application, the onboard environment can be made far less hostile. Describing the fleet at Continental, Vern Alg emphasized: 'On all the twin-aisle aircraft there was one larger restroom that was wheelchair-accessible. On all the single-aisle aircraft, we had one designated restroom with vanity curtains fore and aft—to provide privacy for anyone who needed to leave the door open (for example, when being assisted by a personal attendant). All these restrooms were equipped with extra grab bars. As is usual on aircraft worldwide, the doors of the restrooms could, in an emergency, be removed, even when locked on the inside. On all our aisle-side seats, there was a latch that flight attendants could use to flip up the armrest to facilitate access to the seat row.'

Passengers using arm or elbow crutches also have special requirements. For example, what happens during the boarding process? For reasons of safety, the crutch needs to be stowed in a suitable location. On aircraft that have large overhead bins for passengers' carry-on baggage, it is usually possible for the flight attendant to stow the crutch close to its owner. However, on aircraft that have small bins, it might be necessary for the flight attendant to stow the crutch in a coat closet, possibly at the other end of the aircraft. In this case, at the time of disembarkation, the same flight attendant should not forget to retrieve the crutch. If the flight attendant is busy elsewhere, the passenger will have a hard time trying to explain to a completely new face that, though the crutch is somewhere on the aircraft, its precise location is unknown and that without it he or she will simply not be able to get up and leave the aircraft.

ON THE GROUND

At transition points, passengers with disabilities complain of a host of difficulties:

- wheelchairs are often undersized, flimsy or, worse, dangerously rickety, with missing foot-plates or faulty brakes;
- moving walkways may not actually move;
- being routed via a maze of bustling retail stores can be unsettling;
- there may be greatly increased distances to departure gates;
- sometimes there is nowhere to sit down in long corridors — the concourse buildings at Shanghai Pudong, Milan Malpensa and many new airports are about a mile long;
- lavatories are sometimes located on a different floor from the waiting areas;
- signage can be confusing;
- there is lack of information on distances — the walk to passport control could be 5 minutes or 15;
- employees may be untrained ('I'm not sure how many steps there are to get up to the transit lounge');
- employees are not always helpful ('I don't know — try asking at one of the other desks');
- the local culture is sometimes hostile to travellers whose disabilities are particularly visible;
- there may be long flights of stairs without handrails; and
- at some airports, due to a lack of suitable elevators, passengers with disabilities are still physically (that is, in the arms of two strong helpers) carried up and down flights of steps ('Much faster than going the long way around'), which can be a terrifying experience for everyone.



1

2

3

This page: Examples of information documentation for passengers with disabilities

- 1 British Airways
- 2 Japan Airlines
- 3 Middle East Airlines
- 4 KLM
- 5 Delta Air Lines
- 6 American Airlines

American Airlines

POINT 'A'	126 YDS	378 FT
POINT 'B'	151 YDS	453 FT
POINT 'C'	181 YDS	543 FT
POINT 'D'	566 YDS	1698 FT
GATE 13	640 YDS	1920 FT
GATE 14	667 YDS	2001 FT
GATE 15	775 YDS	2325 FT
GATE 16	586 YDS	1758 FT
GATE 17	633 YDS	1899 FT
GATE 18	697 YDS	2091 FT
GATE 19	717 YDS	2151 FT
GATE 20	781 YDS	2343 FT
GATE 21	803 YDS	2409 FT
GATE 22	861 YDS	2583 FT

WALKING DISTANCES FROM CHECK-IN AREA STAIRS. AVERAGE TIME 20-30 MINUTES.

PLEASE TAKE TIME TO READ THE INFORMATION ON THIS LEAFLET. IT WILL ASSIST YOU TO ARRIVE AT THE GATE AT LEAST 30 MINS. PRIOR TO DEPARTURE. FAILURE TO DO SO MAY RESULT IN THE REMOVAL OF YOUR BAGGAGE

6

ON-BOARD MESSAGE

DATE 3/1/10

OB FLT 283 SEAT 10

CONN TO _____ SEAT _____

CONN TO _____ SEAT _____

FINAL DESTINATION JFK

MR/MS GRAY

TYPE ASSISTANCE NEEDED

ELECTRIC CART
(See GRS G* ELECTRIC CART)

WHEEL CHAIR wchr

CARRY ON/OFF

BLIND

DEAF

SPEAKS _____

FIRST RIDER

UNM-AGE _____

WILL BE MET BY _____

NAME _____

ADDRESS _____

PHONE _____

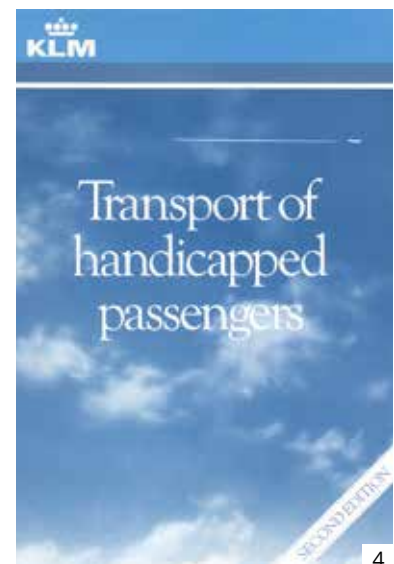
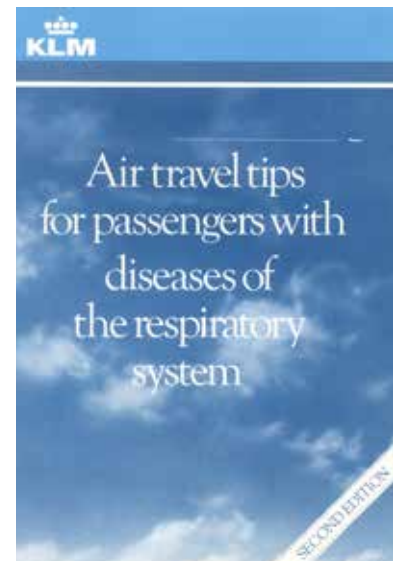
ADDITIONAL INFO/OTHER _____

THIS FORM TO BE STAPLED TO STUB PORTION OF PSGR'S BOARDING PASS

0412-71060
MESSAGE 12-89
SP 2070/2090



5



4

“ANY AIRLINE PRODUCT-DEVELOPMENT MANAGER WHO SUCCEEDS IN GAINING THE LOYALTY OF JET-SETTING PENSIONERS WILL FIND THAT THIS GROUP CAN PROVIDE A CONSTANT FLOW OF REVENUE”



Hidden Disabilities Sunflower Scheme

Above: The sunflower image is a globally recognized symbol for hidden disabilities. Wearing a sunflower lanyard enables a passenger to signal to airport staff that he or she has a hidden disability. This Scheme has been implemented progressively across an international network of hundreds of airports. Globally, 1 in 7 people live with a disability, and of those disabilities, 80% are non-visible, according to www.hiddendisabilitiesstore.com.

Below: A warm welcome for a four-footed passenger! There are special courses to train dogs to become regular flyers, to accompany blind travellers on board aircraft (as explained in this Chapter).



British Airways

HOW TO COPE

To help passengers with disabilities, airlines and airport authorities need to provide kinder, gentler assistance at key transition points: arrival at the curbside, check-in, aircraft boarding and deplaning, baggage collection and transfer to the departure vehicle.

Describing the standards of care provided by Continental at airports, Vern Alg said: ‘Our baggage handlers were trained to look after wheelchair passengers. The wheelchairs that we used were specifically designed for airports: they were large and sturdy, with a solid wheel-base. If a customer’s wheelchair got damaged during the flight, our baggage recovery people could provide an immediate substitute and—working through a support network of local suppliers—they could quickly arrange to repair or provide a replacement for the customer’s own wheelchair. In the terminal buildings, we provided electric cars that stopped at regular pickup points to collect or drop off customers who could not walk the distance to and from the gate lounges.’

From a commercial perspective, if the elderly are grouped with people with disabilities, this represents an enormous and potentially lucrative market segment. Worldwide, according to United Nations, more than one million people turn 60 every month. And in USA, 10,000 people turn 65 every day of the year, according to the *Wall Street Journal*. What other airline market segment has a guaranteed, potential customer universe of this magnitude?

Any airline product-development manager who succeeds in gaining the loyalty of jet-setting pensioners will find that this group can provide a constant flow of revenue. They represent a very flexible market segment with regard to day, date and time of travel. And food and beverage requirements are relatively modest: light, warm, tasty meals, served in small to medium-size portions. Families with young children and elderly passengers generally prefer to be seated close to the lavatories. For safety reasons, they should not be seated in the emergency-exit rows.

Good organization is invaluable. At some airports, there are designated assembly areas for passengers who require special assistance. Local taxi drivers know to use these particular drop-off points for passengers with disabilities, so that there is only a minimum transit distance across the passenger concourse. At Bristol Airport, in England, the authorities worked with the organization Guide Dogs for the Blind to improve airport facilities for blind people. With the support of Brymon Airways and British Airways, a new programme was launched to train suitable dogs to become regular flyers — to accompany blind passengers on board the aircraft.

ACCESSIBILITY PRODUCT PLANNING

Cabin architects might like to ponder the following when designing new-generation aircraft:

- the best time to introduce features for passengers with special needs is at the initial planning stage;
- there is a clear need to install specially designed lavatories that are suitable for passengers with special needs;
- for family members travelling together, it is tempting to dream of specially designated play areas inside the new-model long-distance aircraft. But who will be responsible for a group of small children when the aircraft suddenly hits turbulence?
- illuminated handrails running the length of the passenger cabin: this feature was introduced on the Boeing B717 and Airbus aircraft — on the underside of baggage stowage bins, approximately at shoulder height (as shown later in this Chapter);
- more baby-bassinet positions and oxygen seat positions;
- air-purification systems that will eliminate 100 per cent of airborne germs within the pressurized cabin; the elderly and the very young are especially vulnerable to infection (more information is provided in the Case Studies [2020 Cabin Health Alerts](#) and [2021 Flying Healthy](#), attached to [Chapter 9/Look Smart: Keep Clean](#));
- inflight medical services, via telephone contact and computer tracking systems; and
- braille versions of printed instructions and safety-card information relating to emergency egress.



This page: As with walking frames, wheelchairs need to be sufficiently sturdy for use by fully grown adults. Transportation to and from the door of the aircraft or airport terminal buildings requires strong, serviceable equipment (as shown in this Chapter).



Above: The most important requirement for passengers with special needs is assistance provided by attendants who have been properly trained. Grudging or clumsily enthusiastic help can create problems for everyone.



Medline Industries, Inc.

Below: Assembly point for transfer of passengers requiring wheelchair assistance





EVA Air



EVA Air



EVA Air



EVA Air

Above: Boeing B787 Dreamliner

There is more information about passengers with special needs in the [EXPO 2019: Special Needs Case Study](#) attached to this Chapter.

Finally, if the definition of passengers with disabilities is further extended to include anyone who is less than 100 per cent fit, it has to be assumed that at some point all members of the flying populace will come within that scope. Whether a passenger is suffering from a headache, a toothache, a bad back, an upset stomach, a temper tantrum or just plain old age, every one of us will eventually need a little extra help.

At one level, this topic is an appeal to conscience, a moral imperative. At another level, however, it calls attention to the need to keep abreast of the times by ensuring customer satisfaction. When planning their work programmes for the aviation sector, architects, designers, manufacturers, vendors and suppliers will be able to guarantee a greatly enhanced customer base for their products and services if they keep in mind the special needs of their passengers in what has become an increasingly challenging market segment.

Right: Boeing B717



AirTran Airways

Below: An illuminated handrail at shoulder height can provide an improved level of personal security for passengers with disabilities — and indeed for EVERYONE who walks along the aisle of the aircraft.

“AT ONE LEVEL, THIS TOPIC IS AN APPEAL TO CONSCIENCE, A MORAL IMPERATIVE. AT ANOTHER LEVEL, HOWEVER, IT CALLS ATTENTION TO THE NEED TO KEEP ABREAST OF THE TIMES”



AirTran Airways



Lufthansa



Left: Bombardier CRJ900

Lufthansa

COMMENTS FROM THE SPECIALISTS

DAVID WEINER ARCHITECT, NEW YORK

With the passage of the Americans with Disabilities Act (ADA) in 1990, the US government required that all public facilities be accessible to people with disabilities. This new regulation was not simply a matter of tailoring and adjusting local building codes to provide wheelchair access; it was a wide, sweeping piece of civil-rights legislation acknowledging accessibility and access as a social right for all people, regardless of their disability.

The consequences of this new legislation have affected almost every business and industry. Aside from the obvious need for public buildings to be made accessible, a number of previously overlooked issues have now come to the forefront of design modification. Specifically, the public-transportation sector is an evolving area, adjusting itself to the myriad complications for its users with disabilities. For example, subways are not only having to provide elevators down to platforms but are also planning ways for people with sight and hearing impairments to navigate the systems. Bus and rail systems are similarly affected and are making adjustments to the entire sequence of circulation movement, from car drop-off points at stations, to ticket counters, to entrances of

buses and rail cars. By 2010, Amtrak will be required to have all of its railcars accessible to people with disabilities, including lavatories and dining cars. Likewise, it is not only the airports of the future that will require design modifications to assist passengers with disabilities; the aircraft interior itself presents a unique platform for unprecedented design challenges to accommodate an ageing and ever-more mobile population.

Ultimately, the challenge for design professionals is to create for people with disabilities environments that provide for easy, efficient access that flows seamlessly, and which, most importantly, contributes to a sense of independence and dignity.

PETER A VAN DER MEULEN HUMAN FACTORS ENGINEER, TECMATH OF NORTH AMERICA, INC., TROY, MICHIGAN

Owing to an increasing amount of global business travel and a growing number of wealthy middle-aged people and pensioners, flying is becoming a common means of travel for a large part of the population, not just a luxury for the happy few.

Consumers used to be forced to adjust to a product or environment (squeeze into a car, watch whatever was on TV); now they can adapt products or environments to suit their individual preferences (adjust a car seat, buy a customized PC). Increased flexibility of manufacturing systems and information

technology enable the creation of customized products, using mass-production and mass-assembly methods.

Our environment is increasingly comfortable and adjustable to individual needs, and the future consumer, who is also the future airline passenger, expects the same level of comfort and adjustability in airports and aircraft as in other environments. Car manufacturers, clothing companies, shoe and furniture manufacturers are meeting the demand for increased comfort and adjustability by offering customized products. Car seats have memories for different positions; clothes and shoes can be customized to a person's body size; and PCs can be ordered based on customer specifications.

Designers of airports and aircraft not only have to pay special attention to elderly and disabled passengers but also, in a future of customized products and environments, every single person is a special case, with individual needs and preferences to be accommodated. Airports and airlines will have to think about 'customized accessibility'. Check-in stations for the elderly, information in multiple languages, waiting areas with different ambiances, more meal and movie selections on board, and different seats and/or seat pitches to accommodate passengers with a variety of body sizes — all of these will contribute to a passenger's sense of being able to adjust the flight experience to suit individual preferences.



JETLINER CABINS WINDOWS ON THE WEB

LINKS TO ACCESS CONTACTS MENTIONED IN THIS CHAPTER (Listed Alphabetically)

- Airbus ■ AirTran Airways ■ American Airlines
- Amtrak ■ Association of European Airlines
- Bristol Airport ■ British Airways ■ Brymon Airways ■ Continental Airlines ■ David Jay Weiner Architects ■ Delta Air Lines ■ EVA Air
- Fly Jamaica Airways ■ Guide Dogs for the Blind Association ■ Hidden Disabilities Sunflower Scheme ■ Japan Airlines ■ Junkin Safety
- KLM Royal Dutch Airlines ■ Lufthansa ■ McDonnell Douglas
- Medline Industries ■ Middle East Airlines ■ Milan Malpensa Airport ■ Shanghai Pudong Airport ■ Tecmath of North America, Inc. ■ The Boeing Company
- United Airlines ■ United Nations (UN)
- US Department of Transportation (DOT)



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"THE DESIRE TO FLY
IS AN IDEA HANDED
DOWN TO US BY
OUR ANCESTORS
WHO...LOOKED
ENVIIOUSLY ON THE
BIRDS SOARING
FREELY THROUGH
SPACE...ON THE
INFINITE HIGHWAY
OF THE AIR..."

Wilbur Wright