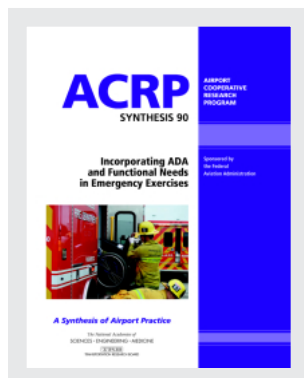


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Incorporating ADA and Functional Needs in Emergency Exercises (2018)

DETAILS

50 pages | 8.5 x 11 | PAPERBACK

ISBN 978-0-309-39043-9 | DOI 10.17226/25208

CONTRIBUTORS

James F. Smith and Todd W. Haines; Airport Cooperative Research Program; Transportation Research Board; National Academies of Sciences, Engineering, and Medicine

SUGGESTED CITATION

National Academies of Sciences, Engineering, and Medicine 2018. *Incorporating ADA and Functional Needs in Emergency Exercises*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25208>.

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AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP SYNTHESIS 90

**Incorporating ADA
and Functional Needs
in Emergency Exercises**

A Synthesis of Airport Practice

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2018

AIRPORT COOPERATIVE RESEARCH PROGRAM

Airports are vital national resources. They serve a key role in transportation of people and goods and in regional, national, and international commerce. They are where the nation's aviation system connects with other modes of transportation and where federal responsibility for managing and regulating air traffic operations intersects with the role of state and local governments that own and operate most airports. Research is necessary to solve common operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the airport industry. The Airport Cooperative Research Program (ACRP) serves as one of the principal means by which the airport industry can develop innovative near-term solutions to meet demands placed on it.

The need for ACRP was identified in *TRB Special Report 272: Airport Research Needs: Cooperative Solutions* in 2003, based on a study sponsored by the Federal Aviation Administration (FAA). ACRP carries out applied research on problems that are shared by airport operating agencies and not being adequately addressed by existing federal research programs. ACRP is modeled after the successful National Cooperative Highway Research Program (NCHRP) and Transit Cooperative Research Program (TCRP). ACRP undertakes research and other technical activities in various airport subject areas, including design, construction, legal, maintenance, operations, safety, policy, planning, human resources, and administration. ACRP provides a forum where airport operators can cooperatively address common operational problems.

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ACRP SYNTHESIS 90

Project 11-03, Topic S04-19

ISSN 1935-9187

ISBN 978-0-309-39043-9

Library of Congress Control Number 2018947108

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AIRPORT COOPERATIVE RESEARCH PROGRAM

are available from

Transportation Research Board
Business Office
500 Fifth Street, NW
Washington, DC 20001

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Printed in the United States of America

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FOREWORD

Airport administrators, engineers, and researchers often face problems for which information already exists, either in documented form or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated. As a consequence, full knowledge of what has been learned about a problem may not be brought to bear on its solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem.

There is information on nearly every subject of concern to the airport industry. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and to make it available to the entire airport community, the Airport Cooperative Research Program authorized the Transportation Research Board to undertake a continuing project. This project, ACRP Project 11-03, “Synthesis of Information Related to Airport Practices,” searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute an ACRP report series, *Synthesis of Airport Practice*.

This synthesis series reports on current knowledge and practice, in a compact format, without the detailed directions usually found in handbooks or design manuals. Each report in the series provides a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems.

PREFACE

By Gail R. Staba

Staff Officer

Transportation Research Board

This report focuses on how airports include persons with disabilities and others with access or functional needs (DAFN) into emergency exercises. In the United States, the main laws and regulations that bear on this synthesis are the Americans with Disabilities Act of 1990, the Post-Katrina Emergency Management Reform Act of 2007, the Americans with Disabilities Act Amendments Act of 2008, the Air Carrier Access Act of 1986, and FAA Advisory Circular 150/5200-31C Airport Emergency Plan. Practitioners also include the FEMA definition which adds temporary access and functional needs. Because not all functional needs are visually or readily apparent, airports find that including these community members with DAFN in emergency exercises improves the safety of passengers, airport visitors, and employees at airports. The report describes effective practices and provides additional resources and tools in appendices. The appendices can be found on the TRB website (www.trb.org) by searching for “ACRP *Synthesis 90*.”

Information used in this synthesis was acquired through literature review and telephone interviews with representatives of 23 airports, 3 airlines, and 4 aviation-oriented organizations.

Dr. James F. Smith, Smith-Woolwine, Inc., and Todd W. Haines, Critical Risk Group, LLC, synthesized the information and wrote the report. The members of the topic panel are acknowledged on page iv. This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As progress in research and practice continues, new knowledge will be added to that now at hand.

AUTHOR ACKNOWLEDGMENTS

An interview-based effort such as this synthesis requires considerable time and cooperation from the interviewees at airports and other organizations. The research team is grateful for the generous assistance given by the following individuals:

Airports Council International Europe	Federico Bonaudi
Alaska Airlines	Jana Osborne
Allegiant Travel Company	Jennifer Barfenstein
Asheville Regional Airport	Kevan Smith, Rita Yanz
Aspen-Pitkin County Airport	John Kinney, Fil Meraz
Ben Gurion International Airport	Avi Bachar (ISRATEAM Ltd)
Boise Airport	Sarah Demory, Jordan Bauer, Amy Snyder
Brunswick-Golden Isles Airport	Michael Menon, Josh Cothren
Cork Airport	Eibhlin McGrath
Denver International Airport	Jennifer Harris, Dave Cunningham, Nick Meacher, Jason Taussig
Fort Lauderdale/Hollywood International Airport	Mike Nonnemacher, Jason Alvero, Linda Merrill
General Mitchell International Airport	Kyle Mirehouse
ISRATEAM Ltd	Avi Bachar
Jacksonville International Airport	Bryan Long, Debbie Long
Los Angeles International Airport	Cassandra Heredia
Manchester International Airport	Ashley Horsfall, Samantha Berry (OCS Ltd)
Minneapolis-St. Paul International Airport	Shelly Lopez, Phil Burke
Phoenix Sky Harbor International Airport	Chris Rausch, Mary Beth Thompson, Mike O'Shaughnessy
Portland International Airport	Kori Nobel
Range Regional Airport	Shaun Germolus
Reduced Mobility Rights Ltd	Roberto Castiglioni
Reno-Tahoe International Airport	Tom Nelson, Mike Scott, Ted Ohm
San Francisco International Airport	Toshia Marshall, Davis Coe, Gloria Louie, Chris Birch, Reginald Saunders, Jeff Airth, Jessica Feil, Larry Merritt
San Jose Mineta International Airport	Barry Brown
Seattle Tacoma International Airport	Kristine Ball, Keith Gillin
Southwest Florida International Airport	Lisa LeBlanc-Hutchings, Julio Rodriguez
Tyson McGhee Airport	Trevis Gardner
Vancouver International Airport	Cal Currie, Cathy Nyfors, Marcia Strang
Virgin Australia Airlines	Kirk Demers



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Note: Photographs, figures, and tables in this report may have been converted from color to grayscale for printing. The electronic version of the report (posted on the web at www.trb.org) retains the color versions.

SUMMARY

Incorporating ADA and Functional Needs in Emergency Exercises

This synthesis focuses on emergency exercises that airports can effectively use to improve the safety of passengers, airport visitors, and employees at airports, in particular persons with disabilities and others with access or functional needs (DAFN). Throughout this report the acronym DAFN will be used to indicate individuals with disabilities and others with access or functional needs. The information presented in this synthesis was gathered by a literature review and telephone interviews with 23 airports, 3 airlines, and 4 aviation-oriented organizations. Based on the data collected, 16 conclusions and 6 suggestions for further research are presented.

Five conclusions stand out:

1. Airports appear to be becoming more involved in integrating DAFN in emergency planning and exercises.
2. Participants report that airports, airlines, and agencies need to be clear on their responsibilities toward passengers in each type of emergency and at each stage of their passage through an airport, and realistic emergency exercises can test this clarity.
3. A disabilities advisory committee can benefit an airport's emergency planning and exercises; general operations; and facility design.
4. Airport emergency drills are more realistic when the DAFN community participates.
5. Evacuation times may not accurately be estimated between exercises and real-life emergencies due to the actual needs of the DAFN community.

Additional conclusions are presented in Chapter 4. Further research appears to be needed in the following six areas:

1. Defining the roles of airport ADA coordinators
2. Establishing the means to work with teams of humans and their service animal partners
3. Determining the effects of the sensory environment in terminals on DAFN persons during evacuations
4. Integrating airport emergency management into regional emergency management
5. Exploring the feasibility of making skycaps and wheelchair service providers common use
6. Developing targeted training and educational materials for airport stakeholders who work with the DAFN community



CHAPTER 1

Introduction



Source: Linda Howard.

Passengers in John Wayne Airport departure lounge.

Introduction

Previous research has included *ACRP Synthesis 51: Impacts of Aging Travelers on Airports*; *ACRP Synthesis 60: Airport Emergency Post-Event Recovery Practices*; *ACRP Synthesis 72: Tabletop and Full-Scale Emergency Exercises for General Aviation, Non-Hub, and Small Hub Airports*; and *ACRP Research Report 177: Enhancing Airport Wayfinding for Aging Travelers and Persons with Disabilities*. These research efforts suggested that DAFN individuals have not been adequately considered in airport emergency exercises and drills. It was necessary to provide a current snapshot on what the airport, airline, and aviation-oriented organizations are undertaking to address the DAFN community and the emergency planning process.

This synthesis focuses on emergency exercises that airports can effectively use to improve the safety of passengers, airport visitors, and employees at airports, particularly persons in the DAFN community.

Definition of the DAFN Population and How Airports Define Their Community for Emergency Exercises

After interviewing the partners throughout the global airport industry, it was determined that there was not a universal definition of the DAFN community. Most of the respondents use the

legal definition in the ADA; however, others also include the Federal Emergency Management Agency (FEMA) definition which adds temporary access and functional needs. As will be seen in the interview findings in Chapter 3, the DAFN community may be as broad as anyone who needs or requests assistance.

Through this research, it became evident that a universal definition for DAFN and the DAFN community is needed to provide better guidance and assistance for airports and their customers. In an airport community, the challenge is to identify persons with disabilities, especially those who need aid in an emergency.

In the European Union (EU), the current term is “persons with reduced mobility (PRM),” but this terminology is now under review (L. Van Horn, interview, 11/8/17). Although PRM focuses on mobility, in reality it includes all disabilities as well as access and functional needs that require assistance to access facilities including transportation. Use of the term PRM is being reexamined because its emphasis on mobility may contribute to underemphasizing other types of disabilities.

Legal Environment

In the United States, the following list contains the main laws and regulations that bear on this synthesis:

- ADA
- Post-Katrina Emergency Management Reform Act of 2007 (PKEMRA)
- Americans with Disabilities Act Amendments Act of 2008 (ADA Amendments Act)
- Air Carrier Access Act of 1986 (ACAA)
- FAA Advisory Circular 150/5200-31C Airport Emergency Plan (FAA Advisory Circular)

The ADA and the ADA Amendments Act along with their implementing regulations protect the rights of persons with disabilities and have the primary goal of outlawing discrimination against persons with disabilities and making public accommodations including transportation accessible to all persons. Although ADA did not directly address emergency response, numerous lawsuits in recent years have extended its concepts to such emergency response activities as evacuations and sheltering. In addition, the ADA implementing regulations and other guidance require effective communications with persons with disabilities; by extension, this will include communications necessary to protect persons during emergencies.

PKEMRA explicitly required nondiscrimination toward persons with disabilities in all FEMA disaster and emergency response, recovery, and assistance activities. It also used a broader definition of disability to include access and functional needs such as temporarily reduced mobility and age-related restrictions.

Under the ACAA, airlines are required to provide assistance with boarding, deplaning, moving through the terminal, and making connections, and they are not allowed to discriminate against persons with disabilities. In general, airlines contract with wheelchair service providers to provide such assistance. ACAA and its implementing regulations do not address emergency planning and exercises.

FAA Advisory Circular 150/5200-31C Airport Emergency Plan spells out the responsibilities of airports for emergency planning. It deals with persons with disabilities and others with access and functional needs as “special needs” populations. As will be discussed more fully in Chapter 3, the FAA Advisory Circular requires attention to special needs in emergency planning in general and particularly in planning for evacuations.

Looking at the effects of ADA, ACAA, and the FAA Advisory Circular, it appears that significant uncertainty exists about the responsibilities of airports and of airlines and their wheelchair

4 Incorporating ADA and Functional Needs in Emergency Exercises

service contractors toward DAFN passengers during emergencies. Where emergency exercises are conducted that include DAFN participants, there may be a greater chance to identify such issues and to develop cooperative fixes.

In the EU, this uncertainty is avoided by European Community (E.C.) Regulation 1107/2006, which specifies that the airport is responsible for PRM passengers throughout the airport and the airline is responsible for them only after they board an aircraft. E.C. regulations also state that for emergency management (including aviation), the policies and procedures of each nation apply.

Regulatory Setting for Emergency Planning and Exercises

Within the airport community, full-scale exercises are conducted every 3 years for U.S. airports and every 2 years for non-U.S. airports. These requirements are dictated by the FAA and International Civil Aviation Organization (ICAO). Through this research, it was revealed that many organizations exceed these requirements by having quarterly seminars, workshops on emergency management, or preparedness topics, and at least an annual tabletop exercise that brings internal and external stakeholders together to discuss a relevant emergency situation.

Throughout the interviews, the research team determined that most airports believed they need to do more seminars, workshops, tabletops, or full-scale exercises to improve the airport. In addition, many airports understood that integrating the DAFN community into emergency planning and exercises would provide airports and emergency personnel with crucial knowledge of the DAFN community's needs during an emergency.

DAFN and Emergency Exercises

During a literature review for this synthesis, the most pertinent document found was *Incorporating Special Needs Populations into Emergency Planning and Exercises* (Davis and Mincin 2005) that is based on research sponsored by *Nobody Left Behind: Disaster Preparedness for Persons with Mobility Impairments*. Davis and Mincin defined special needs, the legal system, and mandates in addition to the background of special needs and emergency management. This document provided an overview of case studies on special needs during real-life incidents and exercises. The authors look at each aspect of emergency planning and exercises in detail to examine how best to include DAFN persons. The conclusion of this document emphasizes the immediate need to start integrating the DAFN community into emergency exercises:

“In response to the inevitable reality of future disasters, it is vital to have a disability component when developing and implementing emergency plans and exercises. Without having the expertise of special needs subject matter experts, plans and exercises risk not addressing specific issues unique to the disability population and others with special needs such as communication issues and outreach, better provision of services, and perhaps enhancing life-safety strategies. Keep in mind that if a drill scenario were a real event, the impact would go beyond the disability community and also include the responders, the general population and entire response. If these issues and concerns are not resolved or considered, consequences could be devastating. Impact would be felt within the decision making processes, deployment and utilization of resources (or lack of), and limiting damage or death (or lack of). One cannot overemphasize the value of fully incorporating special needs issues into emergency planning, preparedness, response and recovery. Not dealing with disability issues in an appropriate and meaningful way results in the “disabling” of the whole response.” (Davis and Mincin, 2005, p. 33.)

Drills and Exercises Guidance for Inclusive Emergency Planning (County of Los Angeles 2014) deals with all aspects of developing, executing, and evaluating drills and exercises that are inclusive of DAFN individuals. It is especially useful in describing effective means of outreach to engage DAFN advocacy groups and individuals in the process.

FEMA's (2013) presentation "Disability Inclusive Emergency Management—Understanding the preparedness, response and recovery needs of the whole community—Overview" provides a comprehensive summary of the means to include DAFN persons in all aspects of emergency management. In the slide on Exercises, FEMA makes three main points:

1. People with a variety of disabilities must be included.
2. Actors should not be used.
3. People with disabilities should pose real-life challenges.

FEMA's Emergency Management Institute offers a course, IS-0368 "Including People with Disabilities and Others with Access and Functional Needs in Disaster Operations" but it does not emphasize exercises.

In addition to FEMA resources, there are other newer state initiatives. Examples are the Georgia Emergency Preparedness Coalition for Individuals with Disabilities and Older Adults (State of Georgia 2017) and Iowa's Emergency Planning for People with Disability (Ford undated). The Arizona Commission for the Deaf and Hard of Hearing's Emergency Response Interpreter Credentialing Program includes exercises and drills to simulate emergency situations (Bond undated). The Texas Disability Task Force on Emergency Management updated its "Effective Communications Toolkit: Emergency Communications with People Who Have Disabilities" (2017).

In June 2017, the International Association of Emergency Managers (IAEM) Bulletin published a special issue dealing with the DAFN community and emergency management. The following papers offer valuable insights that will be useful in developing emergency plans; however, they do not directly address exercises:

- The Illiterate: An Overlooked Vulnerable Population (Manning-Armstrong 2017)
- Establishing a Plan: Importance of Emergency Planning for Individuals with Developmental Disabilities (Canjura; Mauro, Jr.; and Cherofsky 2017)
- Caring for Psychiatric and Special Needs Patients During a Mass Casualty Incident (Burket III and Lawall 2017)
- The Whole Community Approach and Vulnerable Populations: A Case for Improving Diversity Among Emergency Managers (Kirkland and Averette 2017)
- Considerations for Engaging and Serving the Deaf and Hard-of-Hearing Community; Inclusive EM Planning (Batten-Mickens 2017)
- Emergency Managers Are Challenged to Ensure That the Special Needs of Vulnerable Populations Are Considered and Met (Lloyd 2017)
- Is It Time to Shore up the Foundation for Vulnerable Populations? (Warnick 2017)

Research for the National Fire Protection Association noted significantly increased times for persons with reduced mobility to evacuate a building (Hoskins and Heimberger 2017). There are predictive tables for this. Manley et al. (2011) address this more specifically, modeling emergency evacuation of individuals with disabilities in a densely populated airport.

How Airports Find Community Resources to Assist in Developing an Inclusive Program

A recurring theme throughout the research was using local community resources that currently assist the DAFN community and inviting those organizations to play a more active role in the airport through

Specialized hospitals can be a major source of help for airports. Aspen-Pitkin County Airport gets advice and help from the Disabled American Veterans (DAV) Hospital in Grand Junction to prepare for the annual DAV Week in Aspen. Jacksonville International Airport gets advice and assistance from Mayo Clinic and Brooks Memorial Hospital. The advice is useful for both regular operations and emergencies.

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Fort Lauderdale/Hollywood International Airport cited the American Red Cross as a major community partner for emergency exercise design and execution.

review of design, accessibility during construction projects, the overall flow of passenger travel, and emergency exercises. The research showed the importance of establishing lines of communication within the DAFN community and with the local community and the airport as well. It is critical for the success of an airport to incorporate the residents of their local community with their special needs and challenges before an emergency situation occurs.

The community resources help educate all airport employees on how to interact with the DAFN community, identify barriers that may not be obvious, provide training opportunities, and test the emergency plans and procedures so the airport can continually improve customer service.

American Association of Airport Executives Emergency Management Conference

In July 2017, the American Association of Airport Executives (AAAE) hosted an International Airport Emergency Management Conference in Atlanta, Georgia. During the conference, there were two presentations that were relevant to this synthesis: (1) Americans with Disabilities Act During Events and (2) a review of the 2017 Fort Lauderdale Airport Shooting. The speakers included Michael Nonnemacher, Acting Assistant Director of Aviation and Jason Alvero, Airport Emergency Manager for the Fort Lauderdale/Hollywood International Airport; and Frank Ciaccio, Emergency Management Coordinator for the Houston Airport System and Steve Mayers, Director of Customer Experience and ADA Compliance for the Hartsfield–Jackson Atlanta International Airport.

The lessons that were shared during this conference are opportunities for airports to be proactive when planning emergency exercises. The opportunities for improvement include the following:

- Mobility impaired individuals were assisted by other passengers during the emergency.
- Re-unification with assistive devices took up to 1 day.
- Communications with persons with vision and/or hearing disabilities were not successful.
- Having the DAFN community more involved with planning and executing emergency exercises is highly desirable.
- Establishing an online disability training program for all badge holders is helpful.
- Identify escape routes using flooring and wall devices that show the direction of exits.

One important takeaway to assist in emergency exercises preparation and overall emergency response resource management was that the evacuation of one non-ambulatory person might need up to four emergency responders to assist.

Summary

This synthesis provides a snapshot of current practices for the integration of DAFN persons in the planning for, execution of, and evaluation of emergency exercises at airports. The data were collected at a time when airports and airlines were becoming more aware of the need to assist the whole community—including the disability community—in the response to and recovery from emergencies.



Source: Denver International Airport.

Visual paging at Denver International Airport.



CHAPTER 2

Method



Source: Lawrence Rolon.

Participant in exercise at Los Angeles International Airport.

Scope of Synthesis

The objective of this research is to compile existing resources, experiences, and effective practices from airports conducting emergency exercises that consider the DAFN community, with emphasis on collaboration with persons with disabilities and their representatives. The audience for this synthesis of practice is airport stakeholders such as airport personnel, airline partners, tenants, and responders.

As specified in the final scope statement developed by the ACRP Project 11-03/Topic S04-19 panel (the panel) guiding this project, the research shall include a literature review of existing documents and data collection (survey and/or interviews) from airport operators who conduct emergency exercises with participation of the DAFN community. Also, the research will collect data on practices from a range of airports based on geographic location, size classification, and governance. Data collection will include the following, at minimum:

- Identification of known industry leaders and their programs
- Definition of the DAFN population and how airports define their community for emergency exercises
- How airports do or can find community resources to assist in developing an inclusive program

- Current practices and strategies nationally and internationally for including persons with disabilities, service animals, and specialized equipment and supplies in emergency exercises
- Description of effective airport emergency exercise programs, including any tools, templates, and participants on the exercise planning team
- Exercise participants, roles, and responsibilities
- Logistics, processes, and tools necessary when including the DAFN community
- Creatively overcoming limited resources (costs, funding sources, lack of buy-in, leveraging resources)
- Challenges and work-arounds
- Gaps and further research
- Examples of exercise materials such as checklists, templates, planning elements, hazard identification and risk assessment tools, evaluation criteria, after action reports, and other relevant tools and considerations

The product of the research will be a concise report and appendices that include tools for incorporating ADA considerations into emergency exercises.

Method

Early on, it was determined that an online survey would not be used for this research effort. Fully realized exercise programs incorporating DAFN concerns were too rare to find a random survey. With suggestions from the panel, the research team sought suitable case examples to interview in a purposive sample.

Based on a preliminary literature review, direct contacts with candidate airports and other organizations, and discussions with experts in the field, 31 candidate airports, 9 candidate airlines, 4 other entities, and the attendees at the 2017 AAAE Emergency Management Annual Conference were identified as potentially meeting the criteria and were contacted by telephone or email.

A questionnaire (Appendix A) was provided to each entity, the interview was conducted, and the draft write-up of the case example was provided for review and correction. The questionnaire was aimed at airports and was adapted in minor ways to accommodate airlines and other non-airport organizations. Appendix A can be found on the TRB website (www.trb.org) by searching for “ACRP Synthesis 90.”

Of the 45 total entities approached by the research team, interviews with 30 (67%) were completed. Five entities (11%) declined for various reasons. Ten entities (22%) did not respond to repeated contacts via email and telephone. Table 1 shows participation by type of entity.

Table 1. Responses to interview requests.

Type	Requested	Interviewed	Declined	No Response
Airports	31	23 (74%)	2 (6%)	6 (19%)
Airlines	9	3 (33%)	3 (33%)	3 (33%)
Others	5	4 (80%)	0 (0%)	1 (20%)
Total	45	30 (67%)	5 (11%)	10 (22%)

(Smith and Haines data 2017)

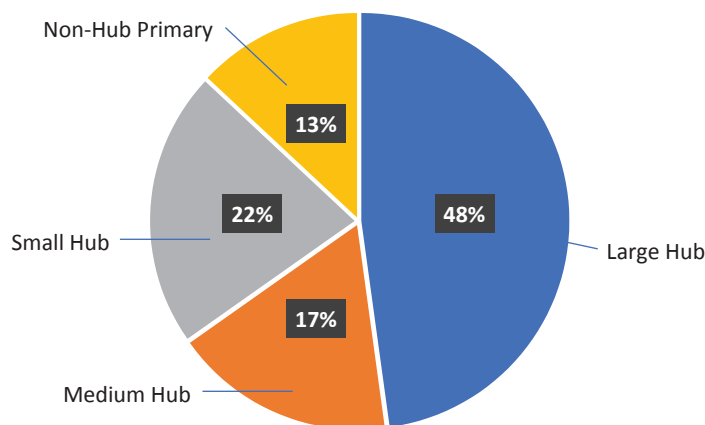


Figure 1. Size of airports in the synthesis (Smith and Haines data 2017).

Appendix B lists the airports, airlines, and other organizations that were interviewed. This appendix can be found on the TRB website (www.trb.org) by searching for “ACRP Synthesis 90.” The synthesis was restricted to airports with scheduled passenger service (Part 139 airports in U.S. terminology). Non-U.S. airports were classified by size by comparing their total passengers (2016) divided by two with the FAA enplanement data for 2016 (FAA 2017). Figure 1 shows the size distribution of the airports.

Data from the interviews have been anonymized and aggregated. Where information from a specific airport, airline, or other type of organization is given, the source gave explicit permission.

Data Analysis and Presentation

Demographic and other background data are included in this chapter. Qualitative (thematic content) methods are the main analytical tool used. Data pertaining to emergency planning and exercises that were gathered in the 30 interviews are presented in Chapter 3. The non-random nature of the samples and the relatively small sample sizes prevented the application of quantitative analytical methods other than determining percentages of respondents in certain categories of answers (descriptive analysis).

Interviews were sought from nine airlines: three gave interviews, three declined, and three never responded.

Demographic and Other Background Data

How does your organization define the DAFN community?

Through the interviews, the airports’ definitions of the DAFN community were found to fall into four general groups:

1. The legal definition in the ADA (“the ADA definition”)
2. The ADA definition plus the FEMA definition, which adds temporary access and functional needs (“the PKEMRA definition”)
3. Anyone who **needs** assistance (“the Israeli definition” but not limited to Israel)
4. Anyone who **requests** assistance (“the E.C. definition” but not limited to the EU)

Of the 23 airports in the synthesis, 8 answered that they use the ADA definition, 3 use the ADA+FEMA definition, 11 use the “anyone who needs assistance” definition, and 1 uses the “anyone who requests assistance” definition. The sorting is complicated by local ordinances and agreements that came out of the ADA lawsuits against cities in 2010–2013, but it shows the current pattern. Clearly, the “anyone who needs assistance” category includes compliance with ADA and FEMA requirements. Several airports go beyond these requirements in differing ways. The two “anyone who” categories differ in who bears the responsibility for initiating assistance: one puts the burden on the airport, airline, or disabilities services contractor to identify and assist whereas the other puts the responsibility on the traveler.

No clear relationship is evident between airport size and the DAFN definition an airport practices.

The three airlines each reported using a different definition: the ADA definition; the ACAA definition; and the Australian national definition that is identical to the ADA definition. However, in practice, Virgin Australia uses the EU definition that extends assistance to anyone who requests it.

What position title in your organization has the primary responsibility for managing and working with your DAFN community?

All 19 U.S. airports have a designated ADA coordinator, either as a primary duty or a major collateral duty, and the 4 non-U.S. airports have the function but use different terminology. Four airports emphasized that part of their culture or customer service philosophy is that all airport employees are expected to ensure ADA compliance or assist DAFN persons. One airport uses the ADA coordinator in its city’s human resources department. The ADA coordinator position may be attached to various airport departments: executive director; operations; facilities and engineering; communications; emergency management; customer service/guest experience; and innovation and business development.

The three airlines assign this responsibility to different parts of their organizations: the Manager of DOT Compliance and Small Claims, the Corporate Customer Service Manager in the Office of the CEO, and Customer Advocacy.

What other staff positions are trained in DAFN support or assistance?

As is expected for an open-ended question such as this one, responses to this question varied widely in depth and breadth. Some airports described their overall training program and efforts to include airlines, tenants, agencies, and concessionaires while other airports listed one or two other department heads that play significant roles in caring for DAFN persons.

Five airports reported training all airport employees to assist DAFN passengers. Responses from the other 18 airports fell into five main clusters, with some airports falling into two or more of the clusters. The specific groups receiving training for disabilities in emergencies are shown in Figure 2.

In discussions triggered by this question, several airports indicated that they find it difficult to engage airlines and other tenants significantly in DAFN training. This is particularly important in U.S. airports where the wheelchair concessionaires work under contract to the airlines and are trained and supervised by the airlines, not by the airports. Even in cases where the airport sets a standard of customer service, the airport depends on airlines to get compliance from the service providers.

The question asked what other persons receive special training for supporting or assisting DAFN passengers, but it can also be viewed as a proxy for what groups can usefully be included in an airport’s planning efforts to deal with issues affecting DAFN passengers during emergency response and recovery.

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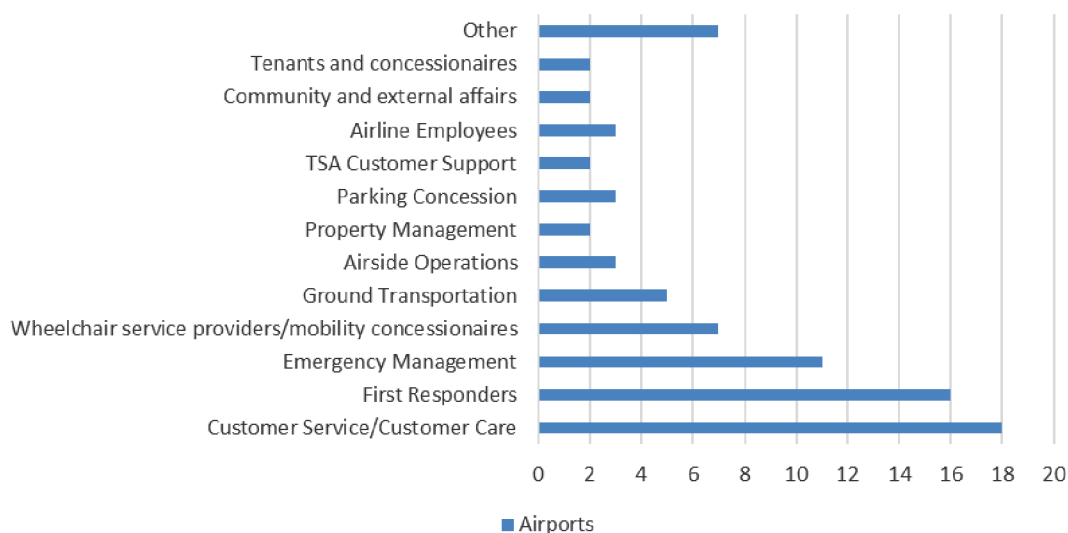


Figure 2. Airport employee groups receiving training for DAFN support or assistance.

The airlines reported training their station managers, gate agents, ramp agents, and complaint resolution officers.

Approximately how many total persons (employees, tenants, customers, clients) are in your facility during peak times?

Of the 23 airports, 20 gave estimates of the total number of persons in their facilities at a single time (Table 2), with the estimates ranging from 100 to 60,000 for total passengers, airport employees, airline employees, agency employees, tenants, concessionaires, and visitors at peak normal operations. The number during irregular operations (IROPS) could be double or triple these numbers.

These estimates represent how many persons need to be protected during emergency response and recovery operations, and need to be considered in designing all-hazard emergency exercises as well. The estimated number of DAFN persons in each airport at peak time depends on what percentage is applied, and there is considerable uncertainty in this percentage. If one looks at the number of passengers who request assistance, the range goes from 0.07% of all passengers (Airports Council International Europe [ACI Europe] estimate of number of passengers requesting assistance) to 20% to 30% of passengers (estimates by three U.S. airports in retirement areas). If one looks at the percentage of the U.S. population that has a disability, the two most prominent values are 12.6% (Rehabilitation Research and Training Center on Disability Statistics and Demographics 2016) and nearly 19% (U.S. Census Bureau 2012). As noted in the interview for Manchester International Airport, relatively fewer persons with disabilities travel by air than does the general population. In any case, any airport is likely to have a significant number of persons who need special assistance in an emergency. This directly affects persons needing assistance but it also affects overall emergency response and recovery actions.

Table 2. Estimate of total persons in airport facilities at peak time.

<1,000	1,000-5,000	5,001-10,000	10,001-25,000	>25,000
5 airports	4 airports	4 airports	4 airports	3 airports
(Smith and Haines data 2017)				

Do you have specific programs designed to assist the different categories of disability and access or functional needs?

Answers for this question were either about specific events or about systems. Two airports discussed how they prepare for major community conventions that are sponsored by disabilities groups, noting that working with the event organizers to prepare for the transit of participants through the airport had led to upgrading of emergency plans and exercises. The second main type of event described was special days for families with autistic members—10 airports reported having such programs noting that these efforts were most often led by an airline. In all cases, the airport and airline worked together so that the entire airport experience from curb to plane was included. Although autism is a cognitive disability getting attention at airports, other forms of cognitive disabilities such as dementia, Alzheimer's, and developmental disabilities are getting far less attention.

Wings for Autism®/Wings for All® are airport "rehearsals" specially designed for individuals with autism spectrum disorders and individuals with intellectual/developmental disabilities. The programs are designed to alleviate the stress that families who have a child with autism or intellectual/developmental disabilities experience when flying. It provides families the opportunity to practice entering the airport, obtain boarding passes, go through security, and board a plane.

Specific systems cataloged by airports in the synthesis focused on traditional disabilities:

1. Visual impairment, such as auditory paging, raised letter and Braille signage, escort services
2. Hearing impairment, especially visual paging and video relay interpretation
3. Cognitive disabilities
4. Mobility impairment, such as wheelchairs, carts, trolleys, stairchairs, skeds, and aviramps

In addition, many of the airports described recent improvements to their service animal relief areas.

Many of the 23 airports described expanded and expanding efforts to train employees and other stakeholders on the effective use of these tools and systems. A few of the airports emphasized their outreach efforts to inform passengers, DAFN organizations, and the general community about the availability and capabilities of such tools and systems.

One of the airlines reported having specific products to cater to specific disabilities. Another airline described its Complaint Resolution Officials who are available to answer questions from DAFN passengers.



Source: Minneapolis–St. Paul International Airport/Metropolitan Airports Commission.

Participant in exercise at Minneapolis-Saint Paul International Airport.



CHAPTER 3

Findings



Source: Lawrence Rolon.

Using a tablet to communicate with a person with a hearing disability.

This chapter presents the interview findings that bear directly on emergency planning and exercises. Data from the airports is given first, followed by the corresponding information from the airline interviews.

Emergency Planning and Exercises Data

Does your organization's emergency plan specifically identify the different categories of DAFN support and needed resources?

About half of the airports have explicit provisions for DAFN persons in their airport emergency plan (AEP). Table 3 presents the responses to whether provisions for assisting DAFN persons are in the plans.

Most of the 12 airports that do include DAFN in their AEPs only include it in the evacuation plan section, but FAA Advisory Circular 150/5200-31C requires “special needs” to be recognized in at least five and potentially seven parts of the AEP. Table 4 lists these requirements.

The only specific part of an AEP listed in Table 4 is evacuation, which accounts for special needs appearing in most of the AEPs. Section 3-7 of 31C requires an airport to train on all aspects

Table 3. Are provisions for DAFN persons in your AEP?

Disabilities in AEP	Disabilities in AEP but Plan Being Revised to Improve	Disabilities not in AEP	Don't Know/ No Answer
9	3	10	1
(Smith and Haines data 2017)			

of its AEP; this implies that training for DAFN aspects be addressed in AEPs and the supporting training plans. Only two airports mentioned this, but the question was not asked explicitly.

Two airlines answered “yes,” their emergency plans include assistance to DAFN travelers.

How often do you conduct emergency exercises (and what types: tabletop or full-scale and how frequently)?

All of the airports reported doing at least a full-scale exercise every 3 years (every 2 years for non-U.S. airports) and a tabletop exercise at least annually. Many airports exceed these frequencies, doing full-scale exercises as frequently as once per year and smaller exercises as frequently as weekly. *ACRP Synthesis 72* examined these frequencies in a larger sample of U.S. airports. Nearly all the airports in the present synthesis indicated recent increases or plans to increase exercise frequencies in the next year. Another trend appears to be efforts to broaden participation among airport stakeholders, particularly airlines and concessionaires.

One airline reported doing a full-scale exercise twice a year and annual tabletop exercises. One airline reported doing an annual full-scale exercise and quarterly tabletop exercises as well as being heavily involved in an airport’s annual full-scale exercises. The third airline reported a minimum for four exercises (full-scale or tabletop) per year and having each of its stations do a tabletop drill once a year.

Do you have a disability advisory group?

This question was added after the first eight airports had been interviewed. Out of the 15 remaining airports, 7 have disability advisory committees and 8 do not. Of the eight airports that do not have such committees, two use similar local government committees and one uses an accessibility consultant to connect with DAFN advocacy groups.

Table 4. FAA requirements for special needs groups in AEPs.

Section	Requirement
3-4.d	In AEP planning, special needs groups must be identified.
6-3-2.b.(1)	There must be a fully functional alert and warning system for special needs persons.
6-3-2.c.(5)	Emergency warnings must be able to reach special needs and limited English proficiency (LEP) people.
6-4-2.b.(1)(c)	Public information systems must be able to reach special needs and LEP in an emergency.
6-4-2.c.(3)(b)	For evacuation, procedures must be included for special needs.
6-4-2.d.(8)(g)	[In an emergency, the] role of American Red Cross may involve helping special needs.
6-4-2.d.(9)	[In an emergency, the] role of Social Services Agencies may involve helping special needs, restricted mobility, elderly and children.
(FAA Advisory Circular 150/5200-31C Change 2)	

Based on the seven airports' descriptions of their disability advisory committees, the typical committee has members of the DAFN community, representatives of DAFN advocacy groups, and airport department representatives. Some airports include airline and TSA members. Reported major benefits from working with such committees include advice on design of new construction and remodeling; identification of barriers; solutions to issues; awareness of challenges facing passengers; more realistic training and exercises; and improved two-way communication between the airport and the community.

Two airlines reported having a disability advisory group.

How often do you conduct emergency exercises utilizing DAFN individuals and their needed specialized equipment or animals?

Table 5 summarizes the responses when the airports were asked how often DAFN individuals participated in emergency exercises. The top row indicates that 16 airports have previously had DAFN participants in emergency exercises. The other rows indicate any specific disabilities or access and functional needs of exercise participants as mentioned by the airports responding to the open-ended question. At least 4 of the 16 airports have had DAFN persons serve as observers and as participants. These data pertain to participation in the emergency exercises and do not reflect participation in emergency planning activities.

In its 2018 triennial exercise—CRASHEX 2018—Minneapolis-Saint Paul International Airport will use an ADA-inclusive scenario that is reproduced as Appendix C. MSP has used ADA-inclusive drills and exercises for many years and reports gaining significant benefits from integrating persons with disabilities in its drills and exercises through the years. Appendix C can be found on the TRB website (www.trb.org) by searching for “ACRP Synthesis 90.”

When DAFN persons participate in emergency exercises, involving airlines and wheelchair vendors in drills will increase awareness of their responsibilities and may reveal gaps. Several airports in the synthesis addressed this question, noting that it had been a well-publicized issue in several recent airport evacuations. Two airports stated that, in an emergency, all parties—airport, airlines, and concessionaires—are expected to assist DAFN passengers. One airport reported monitoring situations from its emergency operations center (EOC) and dispatching airport employees to help passengers when an airline or concessionaire needs help.

One airline has instituted a policy that any DAFN passenger with a companion, either a human companion or a service dog, must be accompanied by an airline, airport, or concessionaire employee at all times in the terminal.

Table 5. Emergency exercises including DAFN individuals (n = 22).

	In most recent full-scale	Planned in 2018	Never
Any ADA or DAFN	16	2	4
Visually impaired	3		
Hearing impaired	1		
Cognitive impaired	0		
Mobility impaired	4		
Infants and children	1		
Elderly	0		
Service Animals	2		
(Smith and Haines data 2017)			

One airline reported never having had DAFN participants in its exercises, one reported having them regularly as observers, and one reported rarely having such participation.

Does your community incorporate the DAFN community in other emergency exercises outside of the airport?

This question did not work very well in the interviews. Many airports answered that they did not know about the exercise practices of the surrounding communities. Several airports, however, answered that they are fully engaged with their communities for emergency planning and exercises; in such cases, about half the communities have participation by DAFN persons or groups.

What type of specific training do you give your employees and first responders on DAFN during emergency situations?

Among the 23 airports, 8 reported providing no special DAFN training to employees, but 2 of 6 airports depend on mutual aid partners that do receive such training. Of the remaining 15 airports, the most common response (6 airports) was that airport employees get awareness training, usually as part of new employee orientation. Another four airports reported giving employees training on how to assist DAFN passengers in all hazards, and two airports train all customer service employees on how to assist when requested. Single airports reported training to assist with an annual special event, providing DAFN training to managers, and training emergency managers and wardens.

Appendix D contains two training presentations: (1) by the Los Angeles International Airport and (2) by the Los Angeles Fire Department. The first deals with evacuation procedures for persons with disabilities and the second deals with first responder interactions with persons with disabilities. Appendix D can be found on the TRB website (www.trb.org) by searching “ACRP Synthesis 90.”

Four particular sources of the training were mentioned. Several airports’ ADA coordinators or emergency management staff members develop and deliver the training; this is typical at airports that provide awareness training during new employee orientation. One airport is working with the American Red Cross to develop and deliver its DAFN emergency curriculum. Two airports use accessibility consultants to guide or provide the training. One airport’s DAFN training is provided by its wheelchair and mobility concessionaire. Locally developed videos are being used at several airports.

One airline reported providing classroom and online instruction by a contractor to all its station employees, and one airline reported that it is part of flight attendant training.

What type of additional equipment or support is identified and utilized during emergencies to assist the DAFN community and their animals, specialized equipment, or care givers?

Of the 23 airports, 20 reported having one or more kinds of specialized equipment to use to assist DAFN persons during emergencies. Most of the equipment was mobility-related: evacuation chairs, stair chairs, aisle chairs, skeds, stair slides, passenger lift devices, and pro-move slings as well as accessible buses for moving evacuees. Three airports reported using aviramps (moveable 1:10 ramps) to allow evacuation of

The most unusual approach reported was using pre-identified support functions to analyze potential needs and to identify sources on the airport staff or through pre-arranged local vendors for specialized services. Aspen-Pitkin County Airport gave the example of making a motorized wheelchair mechanic available to fix assistive equipment damaged in baggage or cargo handling. This is an airport that serves a community that hosts a very large annual gathering of disabled veterans. Pre-identifying support mechanisms is available as a cross-cutting organizational tool that can help any airport identify services and organizations that can help provide routine or emergency services to DAFN passengers.

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passengers in wheelchairs from planes. One airport has a new terminal that has all ramps—no stairs, escalators, or elevators.

What support or training can the DAFN community give to support your organization?

Information provided by 20 airports has been consolidated into the following list of potential benefits that can come from engaging with the DAFN community:

- Broadening perspective
- Improving safety of DAFN passengers
- Understanding of the airport's commitment to serve all passengers
- Building awareness of the DAFN passengers' needs
- Educating airport employees on how to interact
- Identifying accessibility barriers at airports
- Providing improved training opportunities including trainers with first-hand experience
- Recruiting volunteers for exercises and plan reviews
- Understanding the airport's needs and capabilities
- Testing airport emergency plans and procedures
- Communicating expectations

The airlines concurred with the importance of increasing awareness and of learning how to interact with DAFN persons.

What specific lessons have you learned from exercises or real-life events when supporting DAFN individuals during emergencies?

The potential benefits to airports from closer engagement with DAFN passengers and advocates match the lessons learned from exercises and real-life events. When airports have included DAFN persons in their emergency exercises, the airports have learned about gaps in services, misunderstandings, and misperceptions about the real needs. Lessons have also been learned

Shared Lesson from Fort Lauderdale/Hollywood International Airport

During our terminal evacuation in 2013, all of our wheelchair service providers evacuated with the general population, leaving no one to assist those in wheelchairs. This was not so much of a problem in the terminal as much as it was with those on our parked aircraft. Once the passengers were allowed to exit the aircraft, those who required assistance had no wheelchairs or ramps to push the wheelchairs down. Our firefighters actually had to carry passengers off of the aircraft. We have had other real-world events (fire alarm activations, tornado warnings) that have forced us to move passengers from the concourses; however, we did not encounter any roadblocks by using our PA System, Airport Security team, and Emergency Visual Messaging System. I believe that by just having airport personnel present and ready to assist during an emergency can relieve a lot of stress for the DAFN community. You cannot predict what roadblocks you will encounter during an emergency, but being aware that these roadblocks exist can help tremendously in your emergency planning.

from recurring special events and from actual emergencies. Airports that include DAFN issues as part of their after action review (AAR) seem to have gained more than airports that do not specifically include such issues in AARs.

Among lessons learned, problems with communications are perhaps the most frequent and troublesome. Two airports spoke to the need to improve transferring information about the location of DAFN passengers who need assistance. One airport believed that communications were good during emergency response but they broke down during recovery activities. Several airports emphasized the importance of closing the loop by incorporating lessons learned in the continuous improvement process. Effective communications require airport employees to keep the appropriate communication means available to deploy in an emergency—for example, pencil and paper to communicate with a person with hearing impairment.

One aspect of communications dealt with ensuring that DAFN persons, especially those with mobility issues, understand the nature of triage priorities in a mass casualty incident (real or exercise). The issue is that first responders will deal with life-threatening injuries first before rendering assistance to persons who have reduced mobility but do not have a new injury. Education and two-way communication are required.

Misunderstandings concerning the role of the airport and of the airline have the potential to create a lack of services for DAFN passengers. Ideally, in an emergency, the airport, the airlines, and the airlines' contracted wheelchair service providers will work together as a team to ensure the safety of all passengers. One airport described its approach as consequence management; it monitors passenger issues including issues with DAFN passengers from its EOC and dispatches airport employees to assist airlines and mobility providers as necessary.

Airports have learned that passengers in wheelchairs and others with permanent or temporary mobility impairment, which may include the elderly and young children, will need mobility assistance. This has led to the provision of accessible buses and to specialized airramps for evacuating planes. Part of this lesson learned is that catering trucks are not very desirable for plane evacuations and are totally unacceptable for transporting DAFN persons around the airfield. Several airports have had incidents in which wheelchair service providers abandoned their passengers in an emergency. Careful joint planning among airports, airlines, and wheelchair service providers is necessary to eliminate such incidents.

If a passenger's disability requires a medication that must be refrigerated, emergency responders need to be prepared to arrange refrigeration. A medical emergency superimposed on another emergency will complicate both situations and the response to them.

Emergency exercises may not allow an airport to predict the exact roadblocks that may be encountered in an emergency, but they do allow airport personnel to practice coping with surprises. Incorporating DAFN passengers in emergency exercises will increase the range of this practice. Similar benefits may be gained when DAFN communities are included in an AEP.

The final lesson learned is that preparatory outreach pays off for everyone—passengers, their families, the airport, the airline, and first responders.

What barriers or problems have you encountered and how were they resolved (e.g., how about limited resources—funds, people, etc.)?

Airports reported the following barriers and issues that affected their efforts to include DAFN persons in emergency exercises:

- Staff size
- Staff time to develop and institutionalize training

In its interview, one airline illustrated the challenges and solutions: In 2015, a paraplegic person needed to be evacuated during a smoke in the cabin incident—valuable experience for airline and lessons learned. The occupant filmed the response to the incident—his family left the airplane on the slide and he had to stay due to his disability. The pilot and flight attendant during final check of airplane found the individual and lifted him up from his chair and put him on the slide. The pilot and flight attendant had to be very deliberate so not to further hurt the individual and had someone at the end of the slide to catch him. **The 90-second requirement does not work with the DAFN community—importance of being deliberate during emergencies with DAFN community.**

- Insufficient mobility equipment for stairs
- Differing definitions of “accessibility” between airport and airline
- Airport architecture—the physical layout of the airport
- Space limitations
- Most DAFN services (in the United States) are provided by third parties under contract to airlines and not under control of airports
- Getting airlines and other tenants to participate in training
- Assurance of accountability during an emergency response
- Inertia and ignorance, especially toward such things as Universal Design, Universal Access, and Equitable Access
- Confusion over regulatory requirements
- Lack of understanding by passengers that the level of customer service will be diminished during emergency response and recovery

Four of the 23 airports reported having encountered none of these barriers. They appear to have in common a very strong orientation toward superior customer service for all customers including DAFN passengers.

Airports in general have found solutions to these barriers and issues by building partnerships; using volunteers; sharpening focus; developing long-range training and exercise plans; and practicing continuous improvement. All 23 airports in the synthesis showed awareness of the importance of being prepared to help DAFN passengers during emergencies. Three airports use accessibility consultants, six airports work

with the Open Doors Organization, and one airport is having an audit of barriers and issues performed by the American Red Cross.

Do you know of other airports or organizations that have a successful DAFN emergency exercise program?

The responses to this question indicated that many airports are unaware of successful DAFN emergency exercise programs at other airports or at other types of organizations in their communities. It is not clear from the data collected for this synthesis whether airports have overlooked local resources. On the other hand, 12 airports listed other airports as models they admire. LAX (Los Angeles International Airport), PHX (Phoenix Sky Harbor International Airport), MSP (Minneapolis–St. Paul International Airport), the Houston Airport System, DEN (Denver International Airport), DFW (Dallas/Fort Worth International Airport), RSW (Southwest Florida International Airport), and JAX (Jacksonville International Airport) were cited by other airports. LAX, PHX, MSP, and Houston have become well-known through their presentations at industry conferences such as the AAAE Emergency Management Annual Conference. Specialized hospitals, a local school district, the U.S. Coast Guard, and the American Red Cross were also listed as models.

How do you think we can better be prepared to assist the DAFN individuals during emergencies?

Airport responses to this question coalesced around four basic themes:

- Awareness
 - Building relationships in advance of an emergency
 - Increasing mutual awareness

- Engaging with the DAFN communities through outreach
- Convening and using disability advisory committees
- Preparedness
 - Practicing communications and alternative means of communication
 - Training on when and how to assist
 - Planning with DAFN individuals’ needs in mind
 - Exercising realistically and regularly with DAFN participants
- Continuous improvement with DAFN advocates involved in evaluation
- Good emergency management including DAFN persons is part of good customer service
 - Selling the idea that with preparation and understanding, DAFN persons can travel comfortably and safely
 - Extending practices to Friends and Family Reception Centers (Family Support Centers)
 - Equitable access

Appendix E contains the checklist developed by JAX for its 2017 triennial exercise that intensively incorporated multiple types of disabilities and limited English proficiency. Many problems were revealed during the exercise and the ensuing AAR. Appendix E can be found on the TRB website (www.trb.org) by searching for “ACRP Synthesis 90.”

Even if you are unable to incorporate DAFN into emergency exercises currently, do you have a plan to do so? Or, if you had more resources, time, training, etc., how would you incorporate DAFN into emergency exercises?

The four airports that have never had DAFN participants in their emergency exercises all stated the intention to look into it. Their stated first step is to consider the formation of a disability advisory committee.

What barriers or problems have you encountered and how were they resolved?

During an emergency evacuation drill, officials observed how trained service dogs make their human partners stay seated to stay out of harm’s way, hence delaying their evacuation. Revising preflight safety briefs to teach persons traveling with service dogs to command their dogs to help them evacuate will address this issue. It is critical for first responders to be trained to view persons and their dogs as a single “person” to be assisted as a unit and kept together.

The community does not necessarily seem to understand that the level of services during emergency and recovery situations will necessarily be lower than during normal operations. To effectively manage emergency and recovery situations, the community must be informed of the situation, which includes current awareness and transparency in real time; and must know the nature of the emergency, which requires good situational awareness. A written doctrine must address these two types of needs. Special needs populations should be included in the doctrine. “The bottom line: Handling the population is part of the doctrine of crisis management. It is important not to just deal with the event, but to deal with the population including during the aftermath.” (A. Bachar, interview, 9/1/17.)

There is a new benchmark that requires us to understand exactly what is involved when assisting DAFN individuals during emergencies.

“To view the issue in a useful way, it is fundamental to understand that there is no such thing as a disabled person, rather a person who is confronted by a disabling environment. We should therefore focus on changing the environment, not trying to change people.”

—Roberto Castiglioni,
Reduced Mobility Rights Ltd.

22 Incorporating ADA and Functional Needs in Emergency Exercises**Findings**

Appendix F contains the findings from the interviews and literature review presented as a list of outside organizations and agencies to involve when developing a DAFN-inclusive emergency planning and exercise program. Appendix G contains a checklist for integrating ADA and access and functional needs in emergency exercises. Some items may not pertain to a specific airport or in the legal environment outside the United States. Appendices F and G can be found on the TRB website (www.trb.org) by searching for “ACRP Synthesis 90.”



Source: BraunAbility.

Paratransit van.

CHAPTER 4

Conclusions and Further Research



Source: Lisa LeBlanc-Hutchings.

Passengers in departure lounge at Southwest Florida International Airport.

Conclusions

Analysis of the data led to five major conclusions:

1. **Airports are becoming more involved in integrating DAFN in emergency planning and exercises.**
2. **Participants report that airports, airlines, and agencies need to be clear on their responsibilities toward passengers in each type of emergency and at each stage of their passage through an airport, and realistic emergency exercises can test this clarity.**
3. **A disabilities advisory committee can benefit an airport's emergency exercises, planning, and general operations and facility design.** A smaller airport may wish to use the surrounding community's (city or county) disabilities advisory committee.
4. **Airport emergency drills are more realistic when the DAFN community participates.** Persons with actual disabilities and others with access and functional needs should participate in the planning for and actual execution of emergency exercises and drills. This includes serving as observers and participating in hot washes (informal immediate post-exercise reviews) and AARs.
5. **Evacuation times may not accurately be estimated between exercises and real-life emergencies due to the actual needs of the DAFN community.**

In addition, there are 11 other conclusions:

1. Ensuring that wheelchair service providers are fully trained and involved in emergency response is challenging.
2. Airports can benefit from having their ADA emergency plans and exercises identical to or at least closely coordinated with surrounding jurisdictions. This reduces confusion, reduces the need for separate public education activities, simplifies training, and enhances mutual aid potentialities.
3. Having able-bodied victims simulate DAFN persons is insufficient to reveal flaws in plans and procedures.
4. Everyone who works in an airport needs a clear role and training for that role in response and recovery to different types of emergencies. This is critically important during evacuation or sheltering in place.
5. Training is needed on how to properly assist the DAFN persons in an emergency, especially in an evacuation or sheltering in place.
6. AEPs should include individual [medical] emergencies and how the response to them will take place during normal situations and during more general emergencies.
7. Not all disabilities are visible. Airports need to be prepared to deal with cognitive disabilities and with access and functional needs (AFNs) that may become accentuated during emergencies.
8. The role of ADA coordinator appears to be insufficiently defined, and this issue is more acute when DAFN is considered.
9. The main focus is on mobility issues, service animals, and autism. Cognitive disabilities other than autism get far less attention as do co-disabilities (e.g., a person with both visual and hearing disabilities).
10. Evacuation times may not be estimated accurately between exercises and real-life emergencies due to the actual needs of the DAFN community.
11. During the literature review for this synthesis, very few directly pertinent training and educational materials were found. This is a significant gap that will impede efforts to implement DAFN-inclusive emergency training and exercise programs.

Further Research

In addition, six topics for further research that could be beneficial were identified:

1. **Defining the roles of airport ADA coordinators.** Many of the ADA coordinators commented on uncertainties about the roles and requirements expected of their position. This appeared to be true regardless of airport size, but the uncertainty may be more consequential at smaller airports where ADA coordination is a collateral or secondary duty. The lack of a consistent definition of DAFN among the various agencies contributes to this uncertainty.
2. **Establishing the means to work with teams of humans and their service animal partners.** Persons using service animals do better in emergencies when they and their animal partner are treated as a unit and are not unnecessarily separated. Some airports indicated that they would respond separately to humans and to their service animals while others indicated awareness of the need to treat them as a unit. In addition, there is a special need to educate service animal handlers and to train their animals not to resist instructions to evacuate in an emergency.
3. **Determining the effects of the sensory environment in terminals on DAFN persons during evacuations.** This came up in the interview with Manchester International Airport in connection with the multiple sensory distractions of the duty-free shops in the terminals and how they affected autistic passengers during terminal evacuations. Ways to assist persons with cognitive disabilities navigate these sorts of environments need to be investigated.

4. **Integrating airport emergency management into regional emergency management.** This approach was mentioned by a handful of U.S. airports but is the standard in the E.C. The advantage would be the synergies derived from having all emergency training and public education be consistent for the communities inside and outside the airport.
5. **Exploring the feasibility of making skycaps and wheelchair service providers common use.** A very small number of U.S. airports contract directly with wheelchair service providers and provide the service as a common use to all airlines at the airport. This may be one approach to establishing training and exercise participation by wheelchair service providers.
6. **Developing targeted training and educational materials for airport stakeholders for working with the DAFN community.**

The Bottom Line

"In the world of emergency management, we plan, we train, and then we exercise. Planning, training, and exercising are all made more effective when persons with disabilities and others with access and functional needs are included in all parts of the process."

—Kristin Rollwagen,
Minneapolis-Saint Paul
International Airport



Source: Minneapolis-St. Paul International Airport/Metropolitan Airports Commission.

Who is the DAFN member in this planning meeting at Minneapolis-Saint Paul International Airport? Are all disabilities visible?



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Acronyms and Abbreviations

ACAA	Air Carrier Access Act of 1986 (49 U.S.C. §41705)
ACI Europe	Airports Council International Europe
ADA	Americans with Disabilities Act of 1990 (42 U.S.C. §12101)
AEP	Airport emergency plan
ARC	American Red Cross
ARFF	Aircraft Rescue and Fire Fighting
CBRN	Chemical, biological, radiological, and nuclear
daa	Formerly Dublin Airport Authority, operator of Cork Airport
DAFN	Disabilities and access or functional needs
E.C.	European Community
EOC	Emergency operations center
EU	European Union
EWG	Emergency working group
FAA	Federal Aviation Administration
FAA OCR	FAA Office of Civil Rights
ICAO	International Civil Aviation Organization
IDF	Israeli Defense Force
PRM	Person with reduced mobility
TTX	Tabletop exercise
U.S. DOT	U.S. Department of Transportation



Glossary

Access and Functional Needs	This term is broader than the definition of disability and may include temporary disabilities and issues associated with aging and with young children. FEMA defines it as “those actions, services, accommodations, and programmatic, architectural, and communication modifications that a covered entity must undertake or provide to afford individuals with disabilities a full and equal opportunity to use and enjoy programs, services, activities, goods, facilities, privileges, advantages, and accommodations in the most integrated setting, in light of the exigent circumstances of the emergency and the legal obligation to undertake advance planning and prepare to meet the disability-related needs of individuals who have disabilities as defined by the ADA Amendments Act of 2008, P.L. 110-325, and those associated with them.”
Accessibility	Refers to the design of products, devices, services, or environments for people who experience disabilities or access and functional needs.
After action review	A review, usually internal, conducted after response and recovery from an incident are complete for the purpose of evaluating performance and fine-tuning plans and procedures for future incidents.
Air operations area	Any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft.
Airport contingency plan	A comprehensive plan for dealing with all hazards reasonably expected to affect a given airport, required for all non-U.S. international airports by ICAO Annex 14. Its U.S. equivalent is called an airport emergency plan.
Airport emergency plan	A comprehensive plan for dealing with all hazards reasonably expected to affect a given airport, required for all Part 139 airports and recommended for all other U.S. airports. Its international equivalent is called an airport contingency plan.
Biennial exercise	A full-scale exercise required by ICAO of all non-U.S. international airports every two years in order to maintain their certification.

Disability	A physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment.
Disability Advisory Committee	Group, usually formal, made up of members of DAFN community and possibly airport departmental representatives and other airport stakeholders to advise the airport on issues of emergency management, customer service, and community interaction.
Drill	A coordinated, supervised activity usually to test a single specific operation or function of a single agency.
Emergency	Any occasion or instance that warrants action to save lives and protect property, public health, and safety.
Emergency management	The coordination and integration of all activities necessary to build, sustain, and improve the capabilities to prepare for, respond to, recover from, or mitigate against threatened or actual disasters or emergencies, regardless of cause.
Emergency working group	Emergency response group consisting of the airlines and usually the emergency managers and first responders at an airport for the purpose of assisting an airline experiencing an emergency at the airport.
Exercise	A planned, staged implementation of the critical incident plan to evaluate processes that work and identify those needing improvement.
Full-scale exercise	The most complex and resource-intensive type of exercise. It involves multiple agencies, organizations, and jurisdictions and validates many facets of preparedness.
Functional exercise	An exercise that is designed to validate and evaluate capabilities, multiple functions, and/or sub-functions, or inter-dependent groups of functions.
Hub	A very busy commercial service airport.
Incident	An occurrence or event, natural or manmade, that requires a response to protect life or property.
Large hub airport	An airport with at least 1% of U.S. passenger enplanements.
Medium hub airport	An airport with between 0.25% and 1% of U.S. passenger enplanements.
Mobility	Ability to move or be moved freely and easily.
Non-hub primary airport	An airport that enplanes less than 0.05% of all U.S. passenger enplanements but has more than 10,000 annual enplanements.
Part 139 Airport	FAA regulation 14 CFR Part 139 established certification requirements of U.S. airports serving scheduled and unscheduled air carrier aircraft designed for more than

	30 passenger seats and airports serving scheduled air carrier operations in aircraft with more than 9 seats but fewer than 31 seats.
Public address system	An electronic amplification system.
Reduced mobility	Refers to a person with permanently or temporarily impaired mobility requiring assistance to access means of travel or other life functions.
Seminar (exercise)	A discussion-based exercise to orient participants or provide an overview of authorities, strategies, plans, policies, procedures, protocols, resources, concepts, and ideas.
Small hub airport	An airport with between 0.05% and 0.25% of U.S. passenger enplanements.
Tabletop exercise	An activity that involves key personnel discussing simulated scenarios in an informal setting.
Triennial exercise	A full-scale exercise required by the FAA of all U.S. passenger service (Part 139) airports every 3 years in order to maintain their certification.
Visual paging system	A visual messaging system that typically duplicates messaging of a public address system.
Workshop (exercise)	A discussion-based exercise similar to a seminar except that participant interaction is increased, and the focus is placed on achieving or building a product.



A P P E N D I X A

Script for Interviews

Appendix A contains the survey interview script. It can be found on the TRB website (www.trb.org) by searching for “*ACRP Synthesis 90*.”



A P P E N D I X B

Participants

Appendix B contains a list of the airports, airlines, and other entities that participated in the interview process. It can be found on the TRB website (www.trb.org) by searching for “ACRP Synthesis 90.”



APPENDIX C

DAFN-Inclusive Exercise Scenario from MSP

Appendix C contains details from CRASHEX 2018, a DAFN-inclusive exercise scenario from the Minneapolis-St. Paul International Airport. It can be found on the TRB website (www.trb.org) by searching for “*ACRP Synthesis 90*.”



A P P E N D I X D

Sample DAFN-Inclusive Training Materials from LAX

Appendix D contains materials from a sample DAFN-inclusive training at Los Angeles International Airport. It can be found on the TRB website (www.trb.org) by searching for “ACRP Synthesis 90.”



A P P E N D I X E

ADA-Inclusive Exercise Worksheet from JAX

Appendix E contains an ADA-inclusive exercise worksheet from the Jacksonville International Airport. It can be found on the TRB website (www.trb.org) by searching for “*ACRP Synthesis 90.*”



A P P E N D I X F

List of Resource Groups to Involve in DAFN-Inclusive Emergency Planning and Exercises

Appendix F contains a list of groups to contact when considering performing DAFN-inclusive emergency planning and exercises. It can be found on the TRB website (www.trb.org) by searching for “*ACRP Synthesis 90*.”



APPENDIX G

Checklist for Integrating the DAFN Community in Emergency Exercises

Appendix G contains a checklist developed for integrating the DAFN community in emergency exercises. It can be found on the TRB website (www.trb.org) by searching for “*ACRP Synthesis 90.*”

Abbreviations and acronyms used without definitions in TRB publications:

A4A	Airlines for America
AAAE	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
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
TDC	Transit Development Corporation
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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ISBN 978-0-309-39043-9



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