

AIRPORT DISASTER PREPAREDNESS IN A COMMUNITY CONTEXT

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Focus

- Relationships between airports and emergency management agencies (EMAs) for non-aviation disasters
- Natural disasters, pandemics, and industrial accidents in study
- Terrorism excluded to avoid SSI
- Giving and receiving aid

Purpose

- Seek
 - Patterns of cooperation and coordination between airports and their EM partners
 - Trends in airport emergency planning
 - Best management practices (BMPs)
 - Innovative preparedness measures
 - Potential for mutual aid among regional airports and with EMAs on a scale larger than a city or county and smaller than national
- Test multihazards perspective
- Provide a partial snapshot of preparedness in late 2008
- Disseminate results to airports and emergency managers
- Suggest areas for further study

Previous Studies

- 2007-2008 papers by Smith, Waggoner, Rabjohn, Bachar, and Hall on NIMS/ICS at airports during disaster-related operations
- Papers by de Neufville group at MIT on regional coordination of airports for passenger operations
- ACRP study on CBRNE planning and preparedness

A Note on Point of View

- “All airports are alike. Parts 139 and 1542 make them like cookie-cutters. Airports are totally interchangeable.”
- “Place in the community, ownership, geography, operational concepts, physical layout, acreage, legal environment, and history combine to make each airport unique.”

Which is it?

- Both are true.
- The combined truth is nowhere more evident than when airports and EMAs interact.

Hypothesis 1

- H1: Coordination and cooperation between airports and emergency management agencies is a powerful, cost-effective method of enhancing preparedness, mitigation, response, and recovery for multihazard disasters and catastrophes.

Hypothesis 2

- H2: Non-aviation disaster preparedness promotes airport preparedness for aviation-related disasters.

Hypothesis 3

- H3: Protection of airport continuity of operations and continuity of business is essential.

Or, if the airport can't operate, it can't be an asset for response and recovery.

Hypothesis 4

- H4: Airports in the same region can cooperate to adjust for difficulties in the wake of a disaster or catastrophe.

Methods

- How airports and EMAs got into study
- Questionnaire to airports
- Questionnaire to EMAs identified by airports
- Follow-up interviews
- Workshop in South Florida
- Quantitative analysis (factor analysis and multiple regression) on a few variables
- Qualitative analysis on many variables

Results

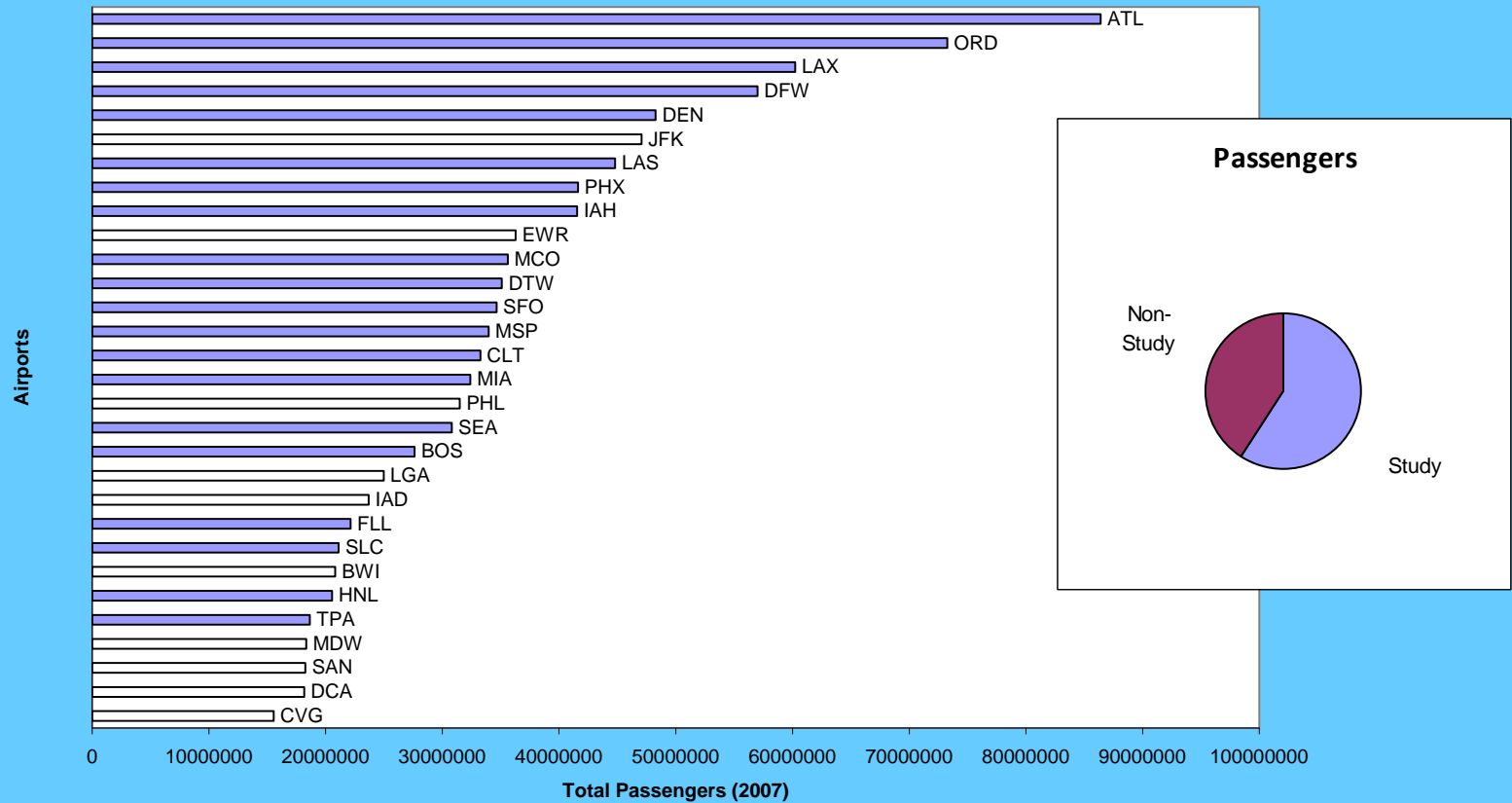
- 37 airports responded
 - 2 GA airports excluded from analysis
- 12 EMA partners responded
- Site visits to 10 airports
 - BTR, CLT, DFW, JAN, LAX, MCO, MEM, MSY, SFO & TPA
- South Florida workshop

Airports Responding

ANC	DEN	JAN	OAK	SFO
ATL	DFW	LAS	ONT	SLC
AUS	DTW	LAX	ORD	TPA
BOS	FLL	MCO	PHX	VNY
BTR	HNL	MEM	PIT	YIP
CLE	IAH	MIA	RSW	
CLT	IND	MSP	SBN	
CMH	JAC	MSY	SEA	

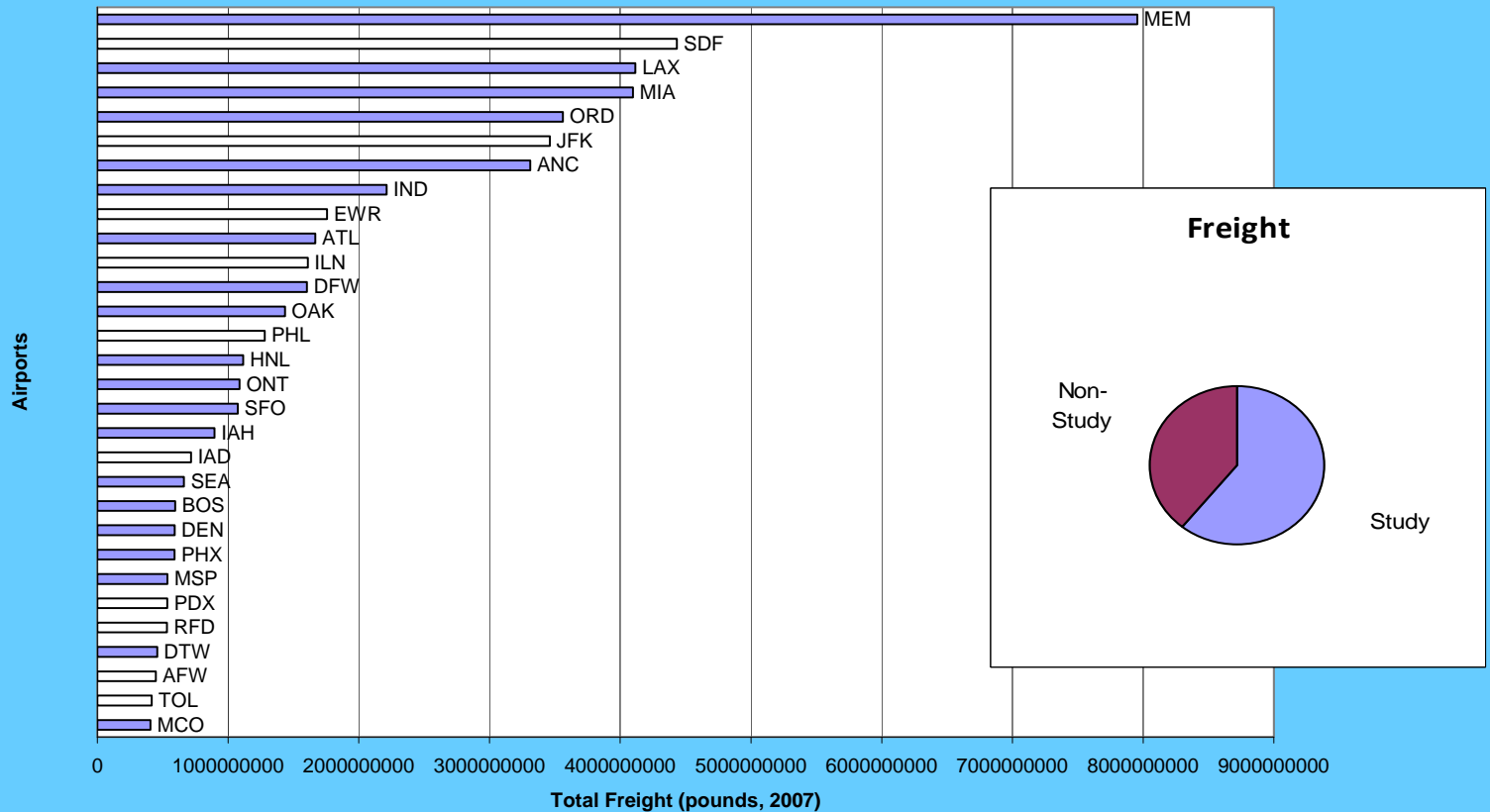
Top 30 Pax Airports in Study

Figure 1. Airports in Study among Top 30 Passenger Airports



Top 30 Freight Airports in Study

Figure 2. Airports in Study among Top 30 Air Freight Airports



EMAs Responding

- Charlotte Mecklenburg (NC) OEM – CLT
- City of Austin (TX) – AUS
- City of Boston (MA) MOEP – BOS
- City of Brook Park (OH) FD – CLE
- City of Honolulu (HI) FD – HNL
- City of Oakland (CA) FD – OAK
- City and County of Denver (CO) OEM&HS – DEN
- East Baton Rouge Parish (LA) MOHS&EP – BTR
- Hennepin County (MN) – MSP
- Hickam Air Force Base (HI) ARFF – HNL
- Lee County (FL) – RSW
- Teton County (WY) – JAC

Airport Characteristics

Airport Operators

City department	14
Independent authority	11
Multijurisdictional authority	7
County department (includes SFO and MIA)	5
Port authority	4
State-owned	2
Federal non-military	0
Military	0
Private	0

Budgetary Independence

Totally independent 12

Subject to general oversight 18

Subject to line-item approval 3

Subject to “taxes” on non-139/1542 revenues 0

Independent bonding authority 9

Final control of concessions revenues 13

Final approval of contracts 12

No response 1

EMA Partnership Characteristics

Mutual Aid Partners

Fire department	32	Tenants	14
Police department	30	Air National Guard	13
EMS department	27	Other nongovernmental agencies	13
American Red Cross	26	Multiagency coordination entities (MACs)	11
Emergency management agency (EMAs)	24	Other DOD	9
Airlines	19	Private providers of emergency services	8
State agencies	19	Statewide mutual aid pact	3
Airport groups	17	Other airports	2
Search and rescue	15		
Other federal agencies	15		

Military Aid to Civil Authority

Characteristic	n
Have MACA agreement	19
MACA agreement used in <24 months	17
Have exercised with military	19

Airport-EMA Relationship Type

- Airport acts as ESF in disasters 25
- Airport is its own MAC 22
- City, county, or state department and fully integrated into city, county, or state EMS 20
- Informal cooperation 18
- Mutual aid pact 18
- Airport has EOC and acts independently 16
- Fully integrated as ESF(s) in local EOC 14
- Statewide EMS or mutual aid 10
- Airport relates to EMAs only for aviation and terrorism and is otherwise isolated from outside EMA/MAC function 2

Partners in Planning, Training, Drilling & Exercising*

PD	34	DOD	15
FD	34	Regional govt organizations	15
EMS	34	Other airports	15
TSA	33	FEMA	14
FAA	32	National Guard	14
Red Cross	29	Adjacent MACs	12
Hospitals	28	ATF	11
CDC	26	Air National Guard	11
Sheriff	26	Coast Guard	10
State agencies	25	Local military base	10
Mass transit	24	NORTHCOM	6
Adjacent governments	23	National Guard NERF-P	5
Other DHS	21	Mobile Hospitals/DMATs	2
Adjacent EMAs	20		

***Local health department not queried**

Plans

COOP Sub-Plans

COOP-related plan	n
Quarantine	28
Decontamination	25
Damage assessment	25
Repair plans	22
Alternate transport modes	14
Alternate use of regional airports	12

Current Plans

Average airport has 8.6 current plans.

Employee Notification	21	Employee Shelter and Feeding	9
Communications	18	Regional Airport Coordination	9
Triage	18	Airport Evacuation	9
Airport EOC	16	Emergency Repair	8
Personnel Access for Emergencies	15	Emergency Intermodal Capabilities	8
Emergency Vehicle Access to Airport	15	Replacement Employees	8
Medical Evacuation	15	Mobile Hospital Operations	8
Pandemic	16	Radiological Decontamination	8
Incoming Logistical Aid	11	Morgue (including Ice Supply)	7
Reception Center	11	Damage Assessment	7
Engineering Assessment	10	Biological Decontamination	7
Chemical Decontamination	10	Reunification Center	7
Airport Backup BEOC	10	Aid Provision Logistical Hub (Redistribution of Aid)	5
		Repatriation Center	4

CDC Presence at Airport

	n	Coop planning with CDC	Have pandemic plan	Plan <12 months old	Exercise <24 months	COOP plan for pandemic
Quarantine Office	13	92%	100%	69%	77%	92%
No Office	22	59%	59%	36%	32%	68%

Mobile Hospital Pre-siting

Off-airport	3
On-airport	5
No plan reported	27

Inventory of Current Plans

Final report lists airports with plans created within past 12 months and exercised within past 24 months.

www.airportstudy2008.com/id28.html

Correlations

Independent Variables (2007 data)

Total passengers

% international passengers

Total freight

Total operating budget

UASI threat risk

Number of AAAE members

AAE certified managers

Dependent Variable

Current plans

=

**Number of plans at each airport
less than 12 months old
and exercised within 24 months**

Factor analysis results

Component 1 – 39.4% of variance in current plans

Ops budget, intl pax, UASI, tot pax

Component 2 – 25.0% of variance in current plans

AAAE, AAE, tot pax

Component 3 – 14.5% of variance in current plans

Total freight, AAE

Four other components account for remaining
21.1%

Regression Model

Multiple linear regression of 3 factor components against Current Plans

Not significant at 5%

Suggestive that total operating budget closely correlates with Current Plans

Other variables in Component 1 are strongly collinear with total operating budget

Regional Cooperation and Coordination

- Relationships are critical
- Succession planning
- Parallel links need “diagonal” awareness
- Regional emergency communications connectivity to include airports
- SEADOG
- Index E ARFF (Aircraft Rescue Fire Fighting) Fire Chief Association
- Florida’s statewide emergency management mutual aid agreement
- Coordinating role of county EOCs
- NIMS and ICS are operational standard
- Aviation cooperation among airports
- Federal agencies and airlines key partners
- Role of state and county health departments
- Training, drilling, and exercising at levels above the basic requirements
- Credentialing EMA personnel for airport access
- Fiscal concerns

Conclusions

- Statistical model
- BMPs
- Innovative preparedness measures
- Characteristics of airports successful in emergency planning
- Bottom line

Statistical analysis

- Total operating budget is main variable but is not significantly correlated to the number of current plans.
- Total passengers, international passengers, and AAAE/AAE are collinear with total operating budget.
- Total freight correlates differently than the passenger-related variables.

BMPs (I)

- Cooperative planning with EMA and other mutual aid partners
- Joint training with mutual aid partners and other EMAs
- Frequent drills
- Realistic drills
- Using real incidents for training and drills
- Airport involvement as asset in non-aviation community drills
- Aggressive after-action reviews (AARs) for real incidents, drills, and exercises

BMPs (II)

- Formal NIMS and ICS training at all levels within the organization, including refresher training
- Succession planning
- Drills and exercise that test succession by removing key employees
- “Wickering in” senior management during training, drills, and exercises
- Pre-siting as many disaster response facilities outside the airport as possible

Innovative Preparedness Measures

- Establish remote EOC during disaster evacuation. (MSY-DFW exercise In 2008)
- Utilize training CDs compiled from surveillance tapes during real incidents. (JAN)
- Establish frequent, regular meetings of operations and emergency managers.
- Integrate GIS into EM and EM communications. (8 in use, 13 under development).
- Institute cooperative pandemic planning with CDC, state health department, local health department, and airport. (FL airports, MSP)

Characteristics of airports successful in emergency planning (I)

- Sense of community
- Stability of staff
- Top-down support and leadership
- Ongoing cooperation with surrounding EMAs
- Frequent realistic drills and exercises
- Use of real events as training and drilling opportunities
- Aggressive use of AARs and innovative use of documentation of incidents

Characteristics of airports successful in emergency planning (II)

- Presence of EM position (not tested in this study)
- Active in Index E Chiefs association (where applicable)
- Active in SEADOG or WESTDOG
- Presence of CDC and interactive planning with health agencies
- Cooperative relationship with TSA (not tested in this study)
- Greater proportion of international passengers
- Large operating budget.

Bottom line

- U.S. airports have generally been aggressively planning for disasters beyond Part 139, either in advance of Advisory Circular 150/5200-31B or in anticipation of it.
- Airport managers have a deep understanding and appreciation that good working relationships with surrounding emergency management agencies are essential to airport preparedness.
- Airports' needs for surge capacity during disaster response can be met through wise mutual aid agreements made effective through joint training, drilling, and exercising.
- Preparedness for non-aviation disasters carries over as preparedness for aviation disasters and terrorism.

Suggestions for Further Study

Regional Cooperation and Coordination

Expansion of SEADOG/WESTDOG Concept to Rest of Country

Sharing of Plans among Airports

Differences between Fire/EM and Law Enforcement Backgrounds in Determining Airport Emergency Management Approaches and Use of NIMS/ICS

Improvement of NIMS/ICS Implementation

EMA and Credentialing for Airfield Access in Disasters

Coordination of Communications among Networks

GIS Applications for EM Communications and Coordination between Airports and EMAs

Off-Airport Pre-Siting of Response Facilities

Extension of SMS to EM

2009 Research

- Expansion of SEADOG/WESTDOG Concept
 - New England
- Regional Cooperation and Coordination
 - Minnesota
- Methods to Improve NIMS/ICS Implementation

For the details

www.airportstudy2008.com/id28.html