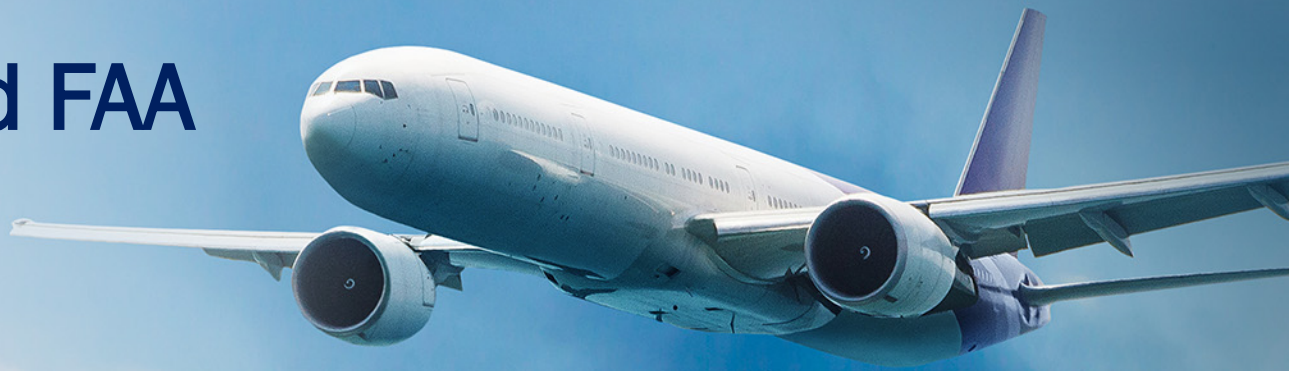
COVID - 19 Impacts

Industry and FAA

Federal Aviation Administration



Presented to: REDAC

By: Anthony Tvaryanas & Eric Neiderman

Date: April 21, 2021

Purpose / Agenda

- **Purpose:**
  - **Capture lessons learned and future forecasts from several perspectives to inform FAA research**

- **Agenda:**
  - **FAA researcher perspectives**
    - **WJHTC**
    - **CAMI**
  - **Industry perspectives**
    - **REDAC subcommittees**

FAA Perspective - WJHTC

Resources for Stakeholders:

trb.org/ACRP/ACRPInfectiousDiseaseResources.aspx

Featured Events: Webinar on what airports and their aviation partners are doing to prepare for the return of the flying public.

- Airport Responsibilities and Preparedness
- Crisis/Emergency Communications
- Continuity of Operations

FAA Perspective - CAMI

Limited Scope Aeromedical Research Program:

- Developed by CAMI in late spring of 2020 driven by
  - Draft legislative language
  - Volume of questions received from aerospace stakeholders
- Executed by internally reprogramming CAMI resources
- Designed to be a limited 1-2 year effort focusing on knowledge capture and synthesis to
  - Inform a safety risk management analysis
  - Establish a foundation for developing a **cabin safety pandemic playbook** for future use

BLI Title	
Aeromedical Research (A11J)	
AVS RE&D BLI RESEARCH PLAN: 2021- 2026	
2. Operational Capability 2	
	Continued safe commercial airline passenger operations during an epi/pandemic
	Sponsor(s)
	Brett Wyrick (AAM-1)
	Justification
	This operational capability addresses a gap in the ability of the agency to maximize the safety of commercial passenger travel during an epidemic or pandemic. The COVID-19 pandemic has had a

Researcher Lessons Learned:

- Information volume and uncertainty
- Manage complexity:
  - Scope → aircraft cabin and diseases of public health significance
  - Organizing framework → risk breakdown structure oriented to exposure environments

Level 0	Level 1	Level 2	Level 3	Level 4	Level 5
Mitigating within aircraft respiratory disease exposure	Minimizing potential for pathogen exposure	Preflight	Screening		
			Disinfection	Efficacy	
				Adverse Effects	Cabin air quality
					Survivability (aircraft materials)
		Emplanement	Risk assessment	Risk model	Parameters - evidence base
					Parameters - assumptions
					Validation
			Risk mitigations	Engineering controls	
				Administrative controls	
				Personnel protective equipment	
		Inflight - seated environment	Risk assessment	Risk model	Parameters - evidence base
					Parameters - assumptions
					Validation
			Risk mitigations	Engineering controls	
				Administrative controls	
				Personnel protective equipment	

- Focus on the next pandemic (generalizability)
- Significant undertaking requiring more than 2 years

Industry Perspective - Guiding Questions

- **What are the major lessons learned from this pandemic that should be applied to preparations for the next pandemic?**
- **What has changed about the industry's 5-10 year future forecast given the pandemic?**
- **What has not changed?**
- **What research questions still need to be addressed?**

Industry Perspective – REDAC Responses

- Changes to the Aviation Industry
- Technology Advances
- Global Competitiveness

Changes to Aviation Industry

Demand:

- Cargo increased, half for commercial traffic, GA represented a similar fall but recovered more quickly
- Has business travel changed permanently?
  - Companies that need to travel are chartering – may mean GA may rebound sooner
- How soon does international travel resume?
- More leisure travel? (weekends are busier)
- Capacity challenges – after pent-up demand what will it balance to?

Competition:

- US/Europe funding models/levels are different - may move the competitive advantage to Europe
- US Economic model: will it change?

Fleet:

- Size is down and average aircraft age is younger
- Type certification program – FAA done remarkable job keeping the certification team engaged

Operations:

- ATC-0: Major challenge
- Airlines operating differently
- TSA has bigger role
- Cleaning programs changed drastically and costly
- Contactless air journey
- Experience is leaving the industry- strategy leaders and technical staff
- Upended business model – struggling with how to find new ways to generate revenue (midst and post COVID)

Technology innovation: budgets significantly reduced

Technology Advances

- The “how” is changing (virtually) but occurring very rapidly/accelerated
- Investment levels changing: R&D comes from retained earnings/raised funds and budgets have gone down
- Hard decisions being made on what to defer and/or delay product introduction
- Emphasis on technology – examples: robotics for cleaning, parking

Opportunities

- Advanced Air Mobility:
  - Freight and autonomous freighters, delivery goods/services, integration with communities
  - Business case may not be on urban air mobility (timeframe airspace/infrastructure is further away)
- Spectrum and evolving to 5G and 6G
- Greener Recovery:
  - Return to growth without emission/noise growth
  - What does trajectory towards net zero (2050) look like?
- Vehicles using hydrogen solution (hours vs minutes and larger payloads)
- Battery electric solutions
- Integrating touchless technologies
- Evaluating cleaning products and their effect on material
- Training needs: reduced/replaced staffing
- Supersonic
- Ice crystals/volcanic ash
- Cybersecurity

Remaining Globally Competitive

Public confidence

- Balancing people's right to privacy and public trust
- Need a "curb to curb" plan for people to feel safe
  - Cleaning standards
  - Social distancing – a significant requirement for terminal space and queuing passengers
  - Partnering with other organizations never partnered with before – (i.e. aeromedical/CDC)

Planning/Future:

- Learn from COVID
  - Case study: document what we did, what we need to do and how do we do it without shutting down the system in the future?
  - Gov't/industry/academia need more deliberate modeling/play booking these type of events.
- Monitor hostile threats

Discussion Questions

- What are the major lessons learned from this pandemic that should be applied to preparations for the next pandemic?
- What has changed about the industry's 5-10 year future forecast given the pandemic?
- What has not changed?
- What research questions still need to be addressed?

Questions & Discussion

Challenge / Discussion Questions

- How will the business model of aviation change?
- How can we restore passenger trust?
- What does this experience mean for the environmental impacts of aviation?
- How do we ensure that aviation is not the means to spread a contagion?
- How does global differences in COVID and vaccination impact aviation?
- What does it look like for aviation to “build back better?”