The Restless Flight Attendant

A statistical analysis finds more detail about flight attendants’ reports of on-the-job fatigue.

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REPORTS

‘A Significant Issue’

Flight Attendant Fatigue: A Quantitative Review of Flight Attendant Comments

Fatigue has emerged as an important safety issue among airplane crews, including cabin crewmembers, who are the “last line of defense” in some accident scenarios.

In 2005, at the direction of the U.S. Congress, CAMI partnered with the National Aeronautics and Space Administration Ames Research Center’s Fatigue Countermeasures Group to review research literature and examine typical flight attendant schedules to assess whether schedules might encourage performance-undermining fatigue. That study’s report concluded that “some degree of fatigue-related performance decrements were likely under the current regulations and suggested six areas of research that would facilitate understanding and government-industry decision making.” It offered recommendations in six areas.

Congress then asked CAMI to conduct follow-up studies in each research recommendation area. The first area involved conducting a survey of field operations — that is, what flight attendants said about their working conditions (see ASW, 10/10, p. 52, for the methodology employed); the findings were published in a second report. This latest report analyzes the flight attendants’ comments quantitatively.

“Overall, responses to the survey indicated that flight attendants consider fatigue to be a significant issue,” this report says. “According to reports from the surveyed flight attendants, most have experienced fatigue while at work and agree that it is both a common experience and a safety risk.”

For the content analysis, researchers subdivided the survey responses into eight broad categories: scheduling, health, airline and airline policy, job performance and satisfaction, meals, comments about the survey itself, workload, and break facilities. The 1,933 paper surveys and 1,506 online surveys that included comments were reduced to a more manageable number. “To ensure the sample of comments was representative of the overall general survey respondents, two demographic items [qualified] eligible surveys: (1) type of operation (low-cost, regional, network), and (2) flight attendant seniority level (junior, mid, senior),” the report says. “Two hundred surveys were randomly
selected for each of the specified survey classifications, and selections were balanced by method of survey completion: 52 percent paper, 48 percent online. A total of 1,800 surveys were then content-coded.”

The report says that scheduling was the most frequent broad category for flight attendant comments in the coded sample, with 79 percent mentioning it as an issue. Other frequently mentioned broad categories were health, 61 percent; job performance satisfaction, 36 percent; and airline and airline policy, 33 percent.

The issues mentioned most frequently across the three airline types and three seniority grades were “fatigue/exhaustion,” in 45 percent of surveys; “rest period too short,” in 40 percent; and “duty day too long,” in 32 percent. Almost none of the surveys identified as issues “adequate amount of sleep,” “satisfaction with benefits” and “good quality of food available.”

In the broad category of scheduling, after performing a chi-square analysis for statistical significance, the researchers found no difference across type of operation and seniority for the number of comments about “rest period too short,” “inconsistent or early reports” [i.e., reporting times for duty] and “impact of delays not considered.” In contrast, “duty day too long” was reported less often by junior-level flight attendants in all types of operation. “Transportation to/from rest accommodations should not be included in rest period” was mentioned most often by regional flight attendants, while network [national or international airline] flight attendants were less concerned about the issue.

“Flight attendants discussed excessive length of the duty day and indicated that the minimum rest period should be lengthened,” the report says. “Some suggested the rest period should be 12 or 14 hours, while others proposed that rest periods should equal or exceed the length of the previous and/or following duty day. For example, one flight attendant said, ‘Layover rest periods or scheduled rest periods should never be shorter than the longest duty day.’ Flight attendants reported that the activities required during the designated rest periods significantly reduced the amount of time available for actual rest or sleep.”

The second most commonly cited broad category was health, and the most commonly cited issues were “fatigued/exhausted,” “inadequate amount of sleep/rest” and “physical health suffers due to job.”

“Flight attendants across type of operation and seniority level were concerned with fatigue/exhaustion and the lack of sleep/rest they are routinely able to get,” the report says. “On the other hand, a significant difference between type of operation was detected for ‘physical health suffers due to job,’ such that network flight attendants as a group had more comments regarding their physical health suffering than either low-cost or regional flight attendants.”

The third most commonly cited broad category was job performance and satisfaction. Most commonly cited issues were “fatigue impact on safety/job performance” and “dissatisfaction with pay/pay for time worked.” There were no significant differences in frequency of these comments across type of operation or seniority level.

“Many flight attendants expressed concern regarding their ability to do their job safely under current operational schedules,” the report says. “Some discussed their inability to focus and remember routine tasks, the compromised quality of their performance and even their fears regarding their ability to respond appropriately in an emergency.”

The most commonly cited issue concerning airline and airline policy was “dissatisfaction with airline/airline concern for flight attendant health and welfare,” which the report says was found at similar levels among all groups.

The survey itself elicited comments, mainly positive. Across all groups, “flight attendants were generally appreciative of the fatigue research that was being conducted,” the report says. “For instance, one flight attendant commented, ‘Thank you for conducting this survey, as flight attendant health is a growing concern.’”
In the broad category of meals, the most common issue specified was “long periods of time without food/no time to eat/no food or water available.” Such concerns were most frequently expressed by regional flight attendants, followed by those working for low-cost airlines.

“Most comments referred to obtaining [food] or eating while on duty; however, some flight attendants indicated that finding food while on layover can be problematic due to the time of arrival and/or departure and/or the location of rest accommodations,” the report says.

In summation, the report says that “overall, flight attendants considered fatigue to be a significant issue, and in fact, fatigue was the most frequently identified issue in the comments. … This is an issue that spans the various types of operations and seniority levels — it is not limited to one subset of the population.”

Flight attendants from regional airlines identified three issues more frequently than those from other operational types: “too many legs/segments,” food and water deprivation, and “transportation to/from rest accommodations should not be included in rest period.” The report says, “Apparently, operational constraints associated with regional airlines introduced some potential fatigue issues that need to be examined. With that in mind, it should be recognized that the network flight attendants did report ‘physical health suffers due to job’ most frequently.”

Seniority levels also created variation. “Junior-level flight attendants identified ‘too many legs/segments’ as an issue more frequently than senior-level flight attendants,” the report says. Senior-level flight attendants reported “insufficient number of breaks/amount of time for breaks” more frequently.

“These may actually be inherently related issues that were reported simply in different terms by junior- and senior-level flight attendants,” the report says. “Regardless, both of these issues appear to be of concern.”

SAFETY NOTICES

Due Consideration
Operations on Contaminated Runways

The safety notice includes “Considerations for Airplane Operators” and “Considerations for Aerodrome Operators.”

When dispatching an aircraft to a destination likely to have runway contamination, the operator should make sure runway conditions are adequate both at the destination and the alternate, the notice says. "In order to increase safety margins when landing on contaminated runways, an in-flight reassessment should be conducted before every approach, and appropriate margins applied to landing performance," it adds.

The report emphasizes the importance of flying a stabilized approach at the appropriate speed and with touchdown at the correct place. "Proper deployment of aircraft deceleration devices and correct braking technique are also critical elements to mitigating the runway-overrun risk when landing on contaminated runway," the notice says. "If it is likely that any of this may not be achieved, a missed approach may be the safest option."

For airport operators, the notice discusses various methods in use for measuring surface condition of runways and the different performance models that airplane manufacturers use to determine braking performance on contaminated runways. "Although manufacturers have used different values and models for contaminated [runway] performance, they all agree that there is no correlation between runway friction measuring devices and aircraft braking performance. For example, Airbus suggests that the only accurate method to get an accurate braking action assessment of an A340 landing at 150,000 kg [330,700 lb], 140 kt and with tire pressures of 240 psi would be for the aerodrome personnel to use a similar spare A340," adding with a touch of dry humor, "a difficult and costly exercise."

The notice says that the U.S. Federal Aviation Administration Takeoff and Landing
Performance Assessment Aviation Rulemaking Committee proposals “should aid standardized reporting and reduce subjectivity.”

BOOKS

Beyond the Moral High Ground
Human Performance on the Flight Deck

Harris — managing director of HFI Solutions and a visiting professor in the School of Aeronautics and Astronautics at Shanghai Jiao Tong University, China — says that his aim in this book is to provide a “systemic overview” of human factors in piloting. “This is my attempt to try and explain what it is all about and how it all goes together. …

“Topics like error and training are all-pervasive; poor design of flight decks or procedures contributes to error; they also increase workload, which increases the likelihood of error; poor crew resource management (CRM) makes error more likely, and so on.”

But the connectedness among human factors issues can create a positive knock-on effect, Harris says, not only for safety but also for airline productivity, efficiency and economy. Because there will always be a balancing act between marginal safety improvements and cost, he says, “Taking an end-to-end system perspective, good flight deck interface design simplifies operating (and hence training) requirements, making training faster and cheaper. … Simultaneously, the flight deck interfaces and better-specified training produce superior, more error-free (safer) performance. Careful selection processes may be more expensive initially but they subsequently reduce the dropout and failure rate in pilot training (which is very expensive). Analysis and modification of crew rostering practices can produce rotas [rosters] which produce more efficient utilization of flight crew, reduce crew fatigue, increase well-being and simultaneously enhance safety. … Human factors as a discipline must avoid its natural inclination to rush to claim the moral high ground by marking its territory solely within the realm of aviation safety.”

The book is replete with references to research literature. Operational requirements “have been derived from the regulatory demands and from a broader need to operate safely and efficiently,” Harris says. “The human factors practitioner in the aviation community is most often a user of theory rather than a generator of theory. Theory is often only generated in retrospect after the operational problem has been addressed.”

Still, it is not enough for front-line personnel just to know that something works; it is also necessary to know why it works, he says.

Harris takes us on an in-depth tour of the work that has been done to understand every aspect of human factors. While there is no way to avoid focusing on one subject at a time, he pref- aces each chapter with a “spider web” diagram including radiating lines to show the relationship of each to the others. His discussion is divided into four parts — one more than Julius Caesar needed for all Gaul, which suggests how many elements go into a systematic study of human factors:

• “The Science Base”: human information processing, workload, situation awareness, decision making, error and individual differences.
• “The (Hu)Man”: pilot selection, training and simulation, stress, fatigue and alcohol, and environmental stressors. The term “(Hu)Man” refers to one of the factors in the so-called “five m’s” system safety model, the others being physical medium, management, societal medium and machine. The (HuMan) and machine overlap to form a mission.
• “The Machine”: display design, aircraft control, automation and human-computer interaction on the flight deck.
• “The Management”: crew resource management and line operations safety audits, airline safety management, incident and accident investigation, and human factors
in aviation as a route to increased operational efficiency.

To give the reader an idea of Harris’s methodology concerning each topic, the following is an abbreviated account of his discussion of pilot selection. The many references to others’ research that he includes are omitted here for the sake of brevity.

Selection depends on job requirements and person requirements. “Job requirements’ specifies the task competencies needed by job incumbents and the performance standards demanded of them,” Harris says. “A competency is the knowledge, skill or ability needed by a successful post holder to perform to the standard required. For example, in addition to the technical skills required of a commercial pilot — the ability to fly the aircraft and manage its systems — there is also a requirement for a successful crew member to be a good team player,” involving not only good leadership skills but also good followership skills: “The first officer must be both assertive and a subordinate, which is a very fine balance to achieve if proper communication and coordination are to occur.”

“Person requirements” specifies the attributes of the successful individual. “To complement the basic psychomotor (stick and rudder) skills needed in a pilot, certain personality characteristics may additionally be considered to be desirable,” Harris says. He cites studies showing that “commercial pilots were, among other things, emotionally stable and low in anxiety, impulsiveness and depression. They also tended to be conscientious and strive to achieve, possessed a high level of assertiveness, and were trusting and straightforward. Poor pilots had higher neuroticism scores than more successful pilots. These attributes need to be operationalized into measurable quantities that can then be used in a selection context, for example, through the use of a suitable personality inventory.”

He notes several commonly used methods of personnel selection, all of which, he says, have strengths and weaknesses depending on the situation.

Interviews are probably used in almost all personnel selection. The merits of the interview technique include that it is a relatively fast and simple way to test communication skills and assess job knowledge; the interviewer can probe in areas that arise during the interview; and the format allows the applicant to ask questions, which might help measure interest, enthusiasm, curiosity and attention.

What could be a problem, then? Harris suggests three possible drawbacks to the interview format, based on understanding the psychology of interpersonal dynamics:

- Interviews are “unreliable and have low validity, especially unstructured interviews.” Validity means that the test accurately measures what it is designed to.
- “Negative information is given disproportionate weight in the selection process.”
- “Decisions tend to be made within the first few minutes of the interview and based upon stereotypes.”

He performs a similar pro-and-con analysis of personality tests, biographical data, cognitive ability tests and work sample tests. And there is further extensive review of the research literature concerning pilot selection.

Above and beyond the details, Harris continually reminds readers of two themes. First, progress based on human factors research is not just an unavoidable cost of doing business to be tolerated by aviation management — instead, it is a boon both for safety and for the bottom line. Second, no part of human factors can be considered in isolation.

He says, for instance, in connection with safety management systems, “The job of the human factors practitioner is to identify, eliminate or minimize hazardous situations. However, if this is not possible, efforts have to be put in to make personnel aware of the hazards, understand the nature of the hazard and have the ability to do so. The safety management function should have links to the selection, training, occupational medicine and engineering functions.”

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