

FLIGHT ATTENDANT FATIGUE: CAMI FOLLOW-ON STUDIES AS DIRECTED BY CONGRESS

Thomas E. Nesthus, Ph.D.

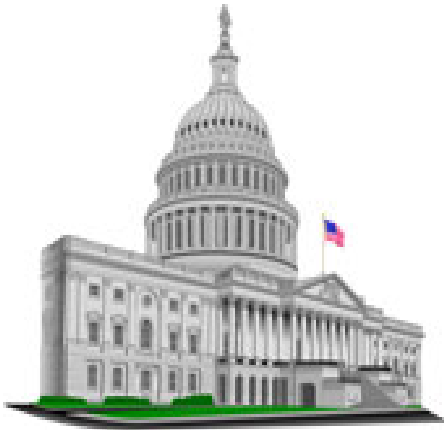
FAA Civil Aerospace Medical Institute
Oklahoma City, OK



Federal Aviation
Administration



2004 DOT Appropriations Bill (House Rpt. 108-671)



1.1 “...to better understand the impact of the minimum rest requirements of FAR 121.467 and FAR 135.273, the Committee recommends...a study of flight attendant fatigue...The study should [include]...the agency’s recommendations on potential regulatory revisions.”

2005 Study Approach

NASA Ames Research Center's Fatigue Countermeasures Group conducted study with CAMI oversight and assistance



Approach:

- 1) Literature review on flight attendant (FA) fatigue
- 2) Query fatigue-related incident/accident data (Aviation Safety Reporting System and NTSB databases)
- 3) Evaluate current duty schedules and compare with the current regulations (various carriers)
- 4) Apply performance and fatigue models to scheduling data sample

2005 Study Recommendations

1. Survey of Field Operations

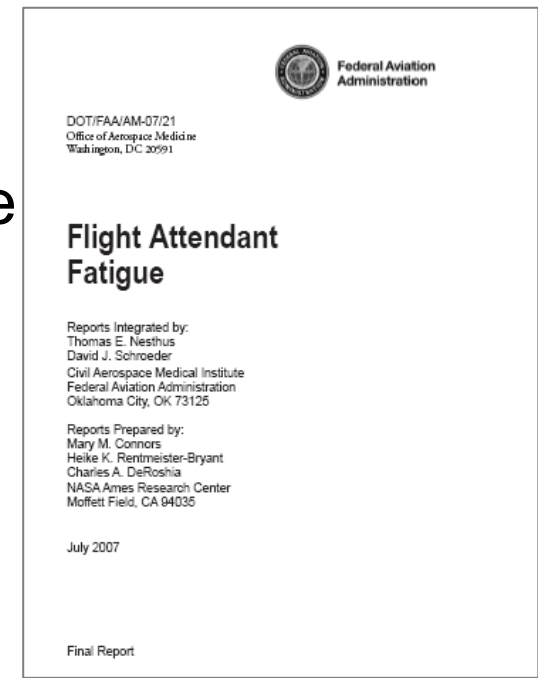
To assess the frequency with which fatigue is experienced, the situations in which it appears, and the consequences that follow

2. Field Research on the Effects of Fatigue

To explore physiological and neuropsychological effects of fatigue, sleepiness, circadian factors, and rest schedules on flight attendants

3. Validation of Models for Assessing FA Fatigue

An important step to understanding whether and how models could be used in conjunction with field operations



2005 Study Recommendations (cont)

4. Focused Study of Incident Reports

To better understand details of the incidents

5. International Carrier Policies and Practices Review

To learn how other countries address these issues and with what results

6. Training

FAs could benefit from information on fatigue, its causes and consequences, its interaction with circadian disruption, and how and when to employ countermeasures (e.g., scheduled naps, physical activity, social interaction, caffeine)

Flight Attendant Fatigue, AM-07/21
<http://www.faa.gov/library/reports/medical/oamtechreports/2000s/media/200721.pdf>

FY-08 Omnibus Spending Bill

“...the Committee directs CAMI to [conduct] analysis in the six areas [including] a survey of field operations, a focused study of incident reports, field research on the effects of fatigue, a validation of models for assessing flight attendant fatigue, international policies and practices, and the potential benefits of training.”



National Survey of Flight Attendant Duty/Rest/Fatigue

**KE Avers, TE Nesthus, SJ King, S Thomas, JO
Banks**

**Civil Aerospace Medical Institute
Aerospace Human Factors Research
Division**



**Federal Aviation
Administration**



Survey Purpose

- Examine the frequency with which fatigue is occurring in cabin crew operations
- Examine the context in which fatigue occurs
- Examine the implications fatigue may have for cabin safety



Survey Development

- Reviewed relevant fatigue literature to identify factors influencing fatigue
- Developed survey using previously validated surveys of fatigue to maximize utility and minimize possibility of bias (e.g., Co, Gregory, Johnson, & Rosekind, 1999)
- Obtained feedback from fatigue experts, flight attendants, and airlines to ensure accuracy of questions and minimize possibility of bias



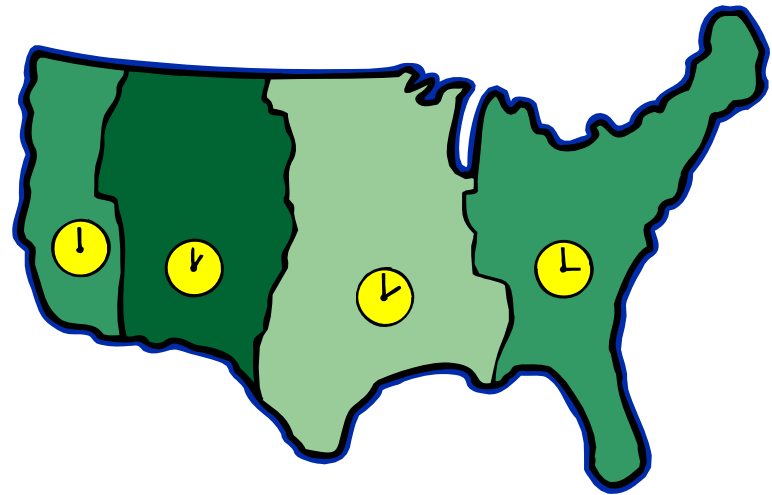
Survey Sample

- Surveys distributed to active flight attendants w/in FAA Civil Aviation Registry (n = 20,826 surveys distributed)
- Survey returns were voluntary and anonymous (n=10,550)
 - online = 4,571
 - paper = 5,979
 - Overall response rate = 51%
- Inclusion Criteria
 - Active flight attendant w/current airline for at least 1 month
 - Flown w/in previous bid period
 - Adjusted returns (n=9,180)
 - Adjusted response rate = 44%



Demographics

- Gender: Female= 79%, Male=21%
- Age: 45.9 yrs
- Height: 5 ft 5 in
- Weight: 150 lbs
- Geographical location:



	Pacific	Mountain	Central	Eastern	Other
Home	16%	8%	26%	48%	2%
Assigned Domicile	15%	6%	24%	53%	2%

Demographics

- Majority **(73%)** worked for one airline throughout their carrier
- Majority **(82%)** represented by a union at current airline
- Representative of seniority listing
 - Top one-third **(41%)**
 - Middle one-third **(34%)**
 - Bottom one-third **(26%)**
- Representative of types of operations
 - Low-cost **(29%)**
 - Regional **(32%)**
 - Network **(39%)**



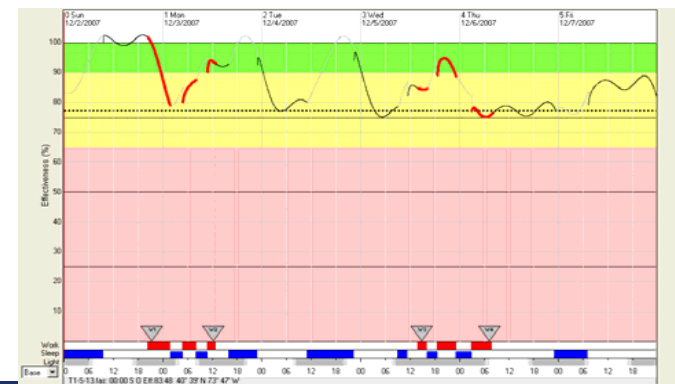
Demographics



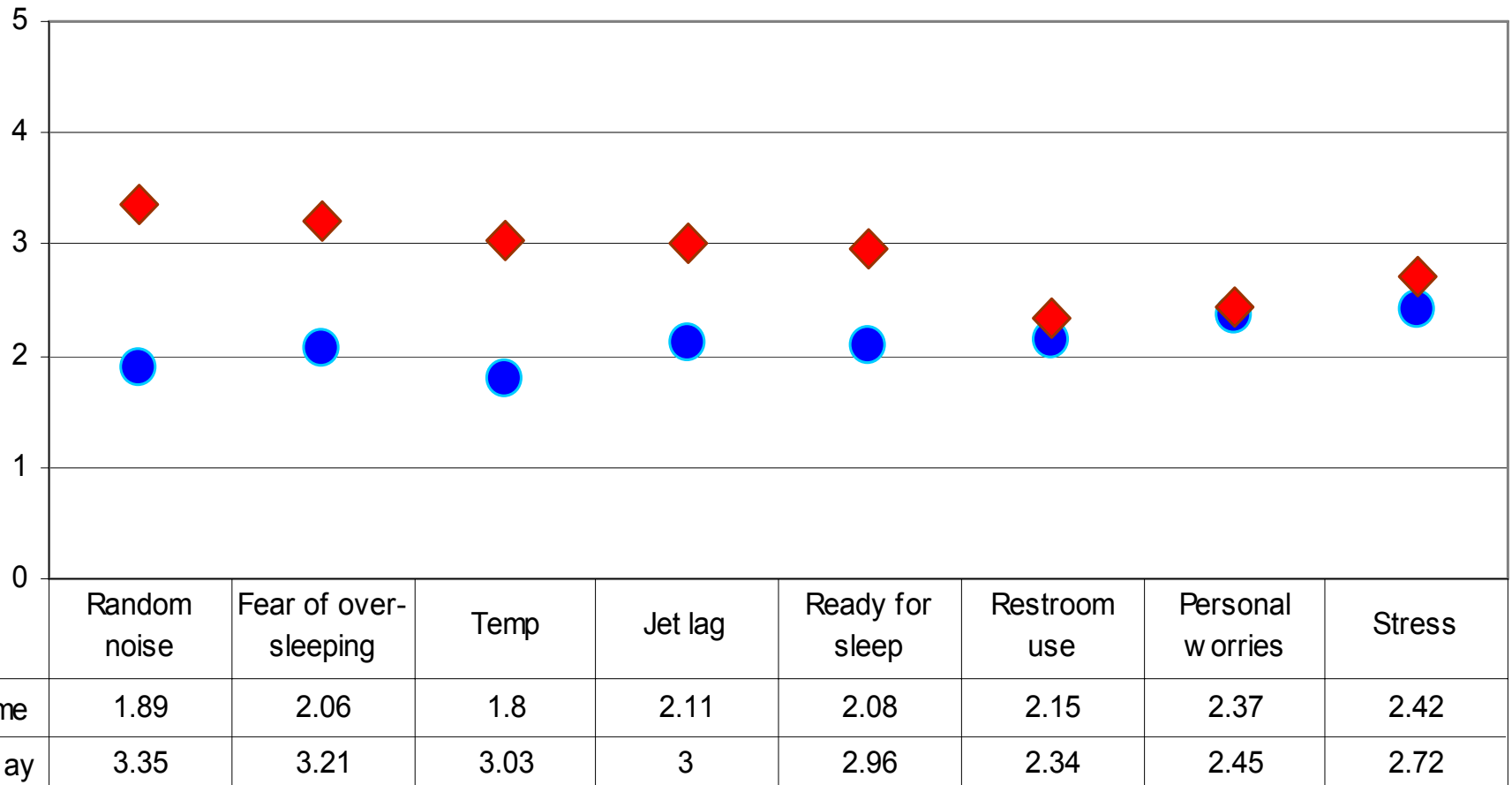
- The average bid period was 28 days (including flight time, duty time, time spent “deadheading”)
- Average time in each type of cabin service
 - Economy – 64%
 - Business – 8%
 - First Class – 13%
 - Premium – 1%
- Number of flight segments ranged from **0 to 7** in one day (**M = 2.8**)
- Majority (**75%**) flew flight segments **1 to 4** hrs in length
- Nearly half (**47%**) reported that none of their flights went outside the U.S.

Frequency of Fatigue

- More than half (**52%**) had “nodded off” while working
- Majority (**84%**) reported being fatigued in their previous bid period
- Of those,
 - **44%** identified workload as a contributing factor
 - **42%** identified work pace as a contributing factor
 - **83%** reported that work schedule contributed to fatigue
- Sleep Profile
 - At Home: **7.7** Hrs
 - Away from Home: **6.5** Hrs

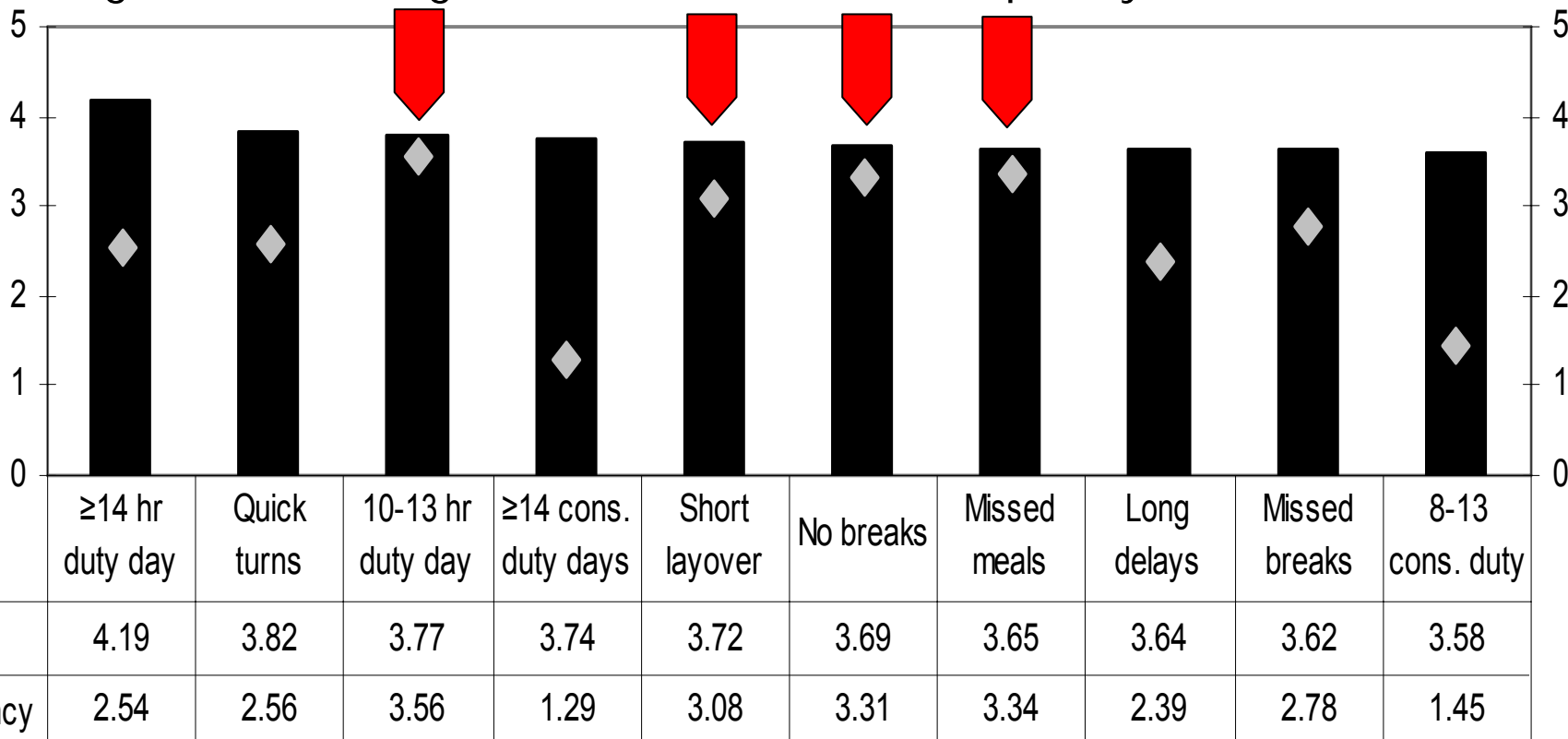


Factors that most interfere with sleep



Context of Fatigue

Highest-rated fatigue factors overall and frequency of occurrence.



Fatigue Implications for Safety

DANGER!

- Of the flight attendants experiencing fatigue while on duty, **71%** reported their safety-related performance was affected.
 - **60%** believed ability to respond to passenger needs (including service and safety-related items) was compromised
 - **36%** reported cabin safety performance (e.g., arming/disarming doors) was affected
 - **34%** felt their vigilance regarding cabin security (e.g., passenger risk assessment was impeded)
 - **14%** indicated preflight safety briefings were affected



Recommendations from Flight Attendants



Conclusions

- ✓ • Flight attendants consider fatigue to be a significant issue
- ✓ • Most have experienced fatigue while at work and agree it is a common experience
- ✓ • Flight attendants consider fatigue a safety risk
- ✓ • Scheduling factors made up 8 of the top-10 factors contributing to fatigue
- ✓ • The availability of breaks and missed meals accounted for the other top-10 contributors to fatigue
- ✓ • Flight attendant recommendations addressed the top-10 factors contributing to fatigue

Recommendations

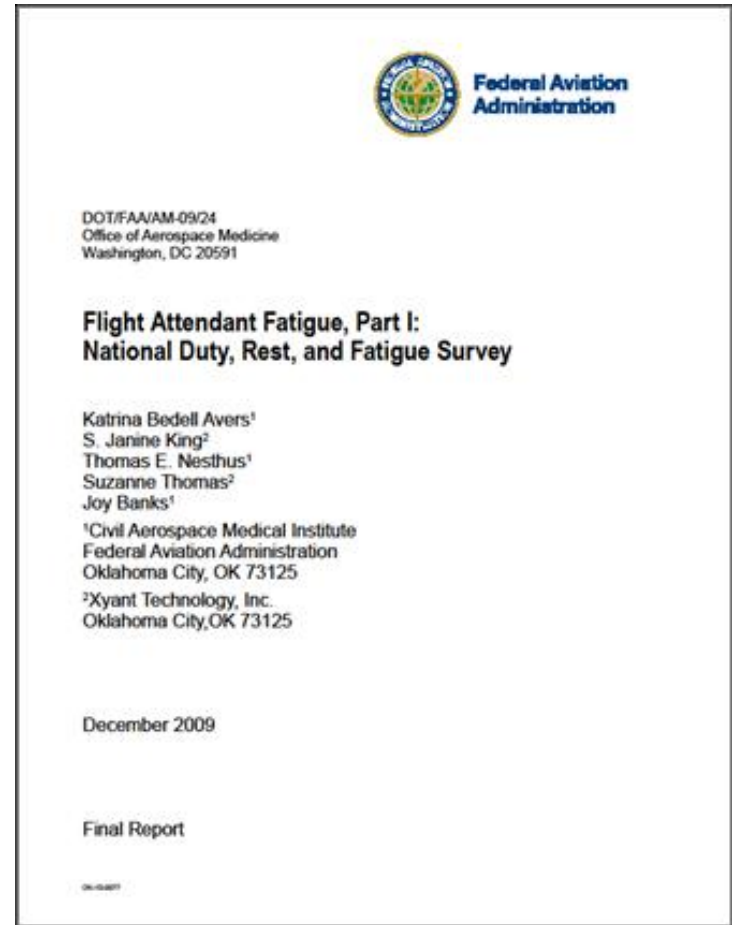
- Examine ways to improve schedules from a science-based approach to maximize alertness and minimize fatigue
- Examine alternative nutrition and break opportunities while on duty. Healthy meals can only be beneficial if there's opportunity to eat
- Implement a comprehensive, science-based fatigue countermeasures training program for flight attendants

Origin	Destination	Time	Status	
Chicago From	Belt	8	7:35 PM	Now 7:35
Detroit	Atlanta	2	7:40 PM	On Time
Washington-IAD	Waukegan	6	7:41 PM	On Time
Chicago	Chicago-Midway	3	7:42 PM	On Time
Chicago	Chicago-Midway	8	7:45 PM	On Time
Chicago	Chicago-Midway	3	7:50 PM	On Time
Chicago	Chicago-Midway	7	8:00 PM	On Time
Chicago	Chicago-Midway	8	8:20 PM	On Time
Chicago	Chicago-Midway	2	8:50 PM	On Time
Chicago	Chicago-Midway	8	9:15 PM	On Time
Chicago	Chicago-Midway	9	9:30 PM	On Time
Chicago	Chicago-Midway	2	9:40 PM	On Time
Chicago	Chicago-Midway	2	9:55 PM	On Time
Chicago	Chicago-Midway	5	10:15 PM	On Time
Chicago	Chicago-Midway	5	10:19 PM	On Time
Chicago	Chicago-Midway	5	5:55 PM	On Time

Questions?

Katrina Bedell Avers, Ph.D.
Ph. 405-954-1199
Katrina.Avers@faa.gov

Thomas E. Nesthus, Ph.D.
Ph. 405-954-6297
Tom.Nesthus@faa.gov



http://www.faa.gov/library/reports/medical/oa_mtechreports/2000s/media/200924.pdf