

Analysis of Incident Reports

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Introduction

- **Aviation personnel are able to report safety-related issues to airlines or government entities such as the FAA, without penalty, through voluntary safety reporting systems**
 - Aviation Safety Reporting System is a national program that includes all aspects of aviation operations



Purpose of Study

- **Utilize existing safety reports to identify commonly cited safety issues and conditions associated with fatigue-related reports for flight attendants**

Methods

- **ASRS**

- On-line Database

- Full-form Reports
- Cabin Crew Personnel
- January 1990 – December 2007
- N = 2,628

- Categories

- 1) possible contributors to fatigue

- Crew Coordination/ Communication, Crew Illness/Injury, Passenger Illness/Injury, Passenger Misconduct

- 2) indicators of fatigue

- Crew Rest Facility, Duty Time, Fatigue, Lack of Sleep/Rest, No/Missing Break/Meal, Scheduling



Results - Overall

Year	Reports Received	Full- form Reports	Full- form Percentage
1997	50	59	118.0%
1998	622	387	62.2%
1999	737	551	74.8%
2000	896	440	49.1%
2001	754	267	35.4%
2002	505	244	48.3%
2003	437	245	56.0%
2004	489	139	28.4%
2005	585	68	11.6%
2006	1,093	115	10.5%
2007	1,035	62	5.9%
Total	7,203	2,628	36.1%

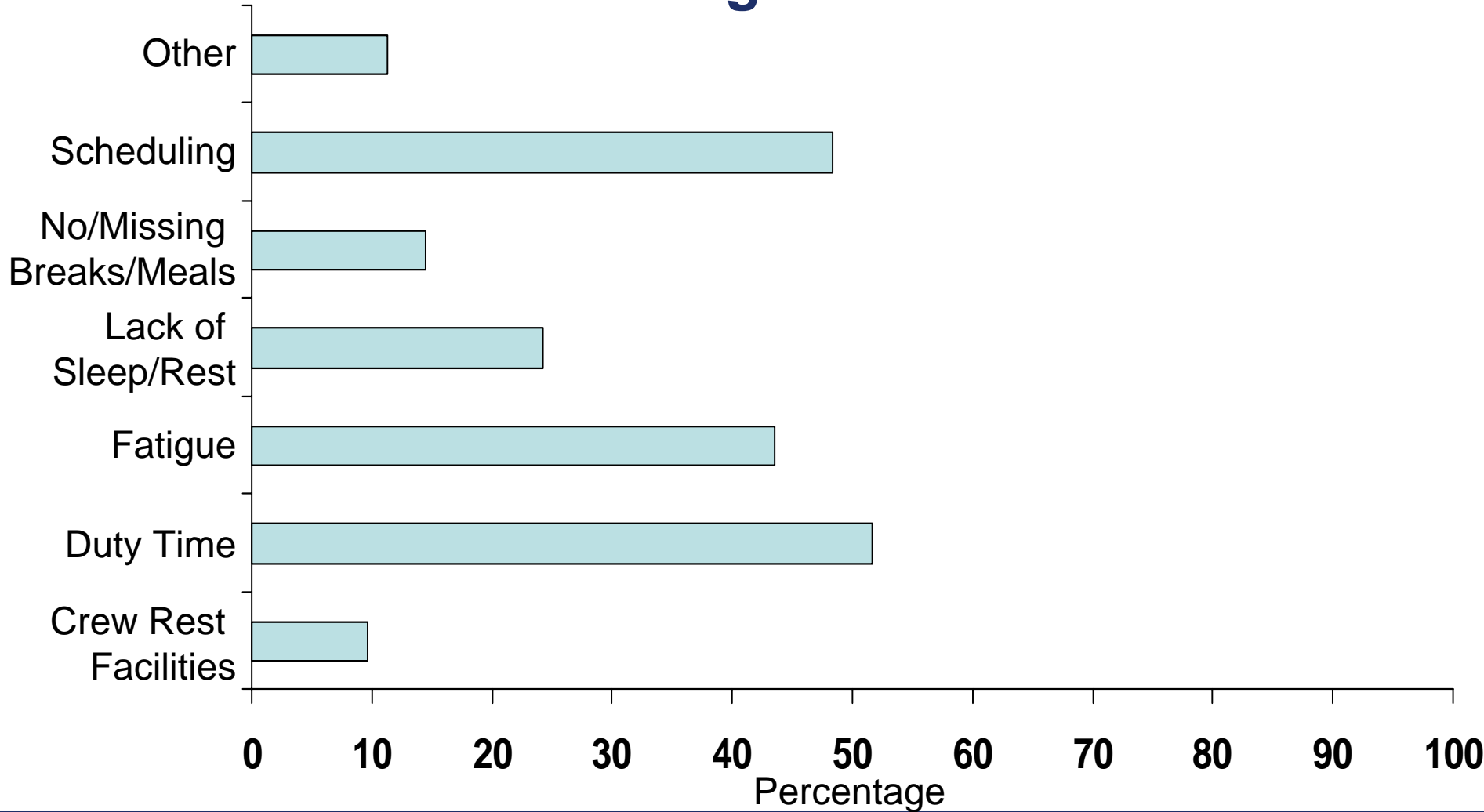
Results - Cabin Crew Fatigue Reports

Year	Percentage of full-form reports discussing fatigue
1995	11.1%
1996	4.3%
1997	3.4%
1998	0.5%
1999	1.1%
2000	1.4%
2001	1.1%
2002	0.0%
2003	2.0%
2004	2.2%
2005	16.2%
2006	9.6%
2007	16.1%



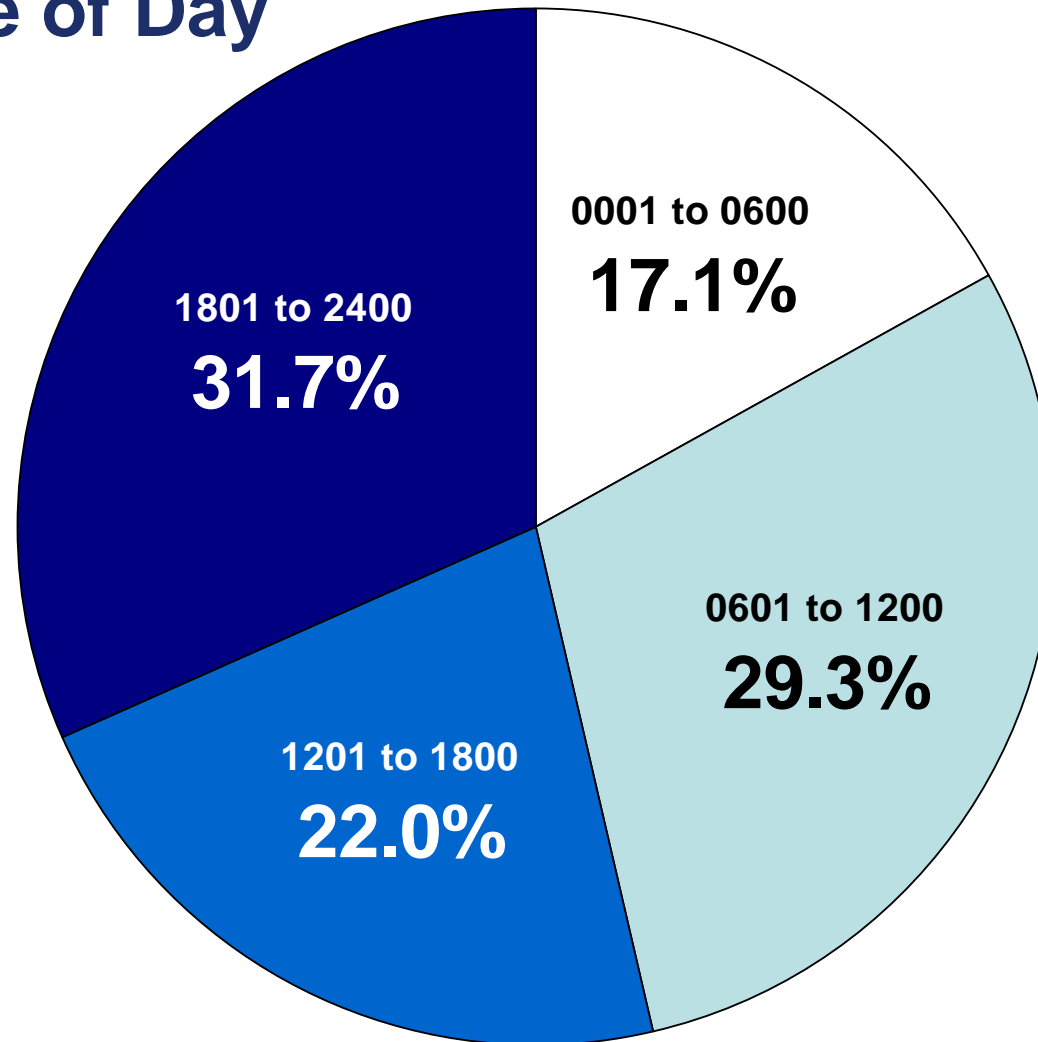
Results - Cabin Crew Fatigue Reports

- Indicators of Fatigue



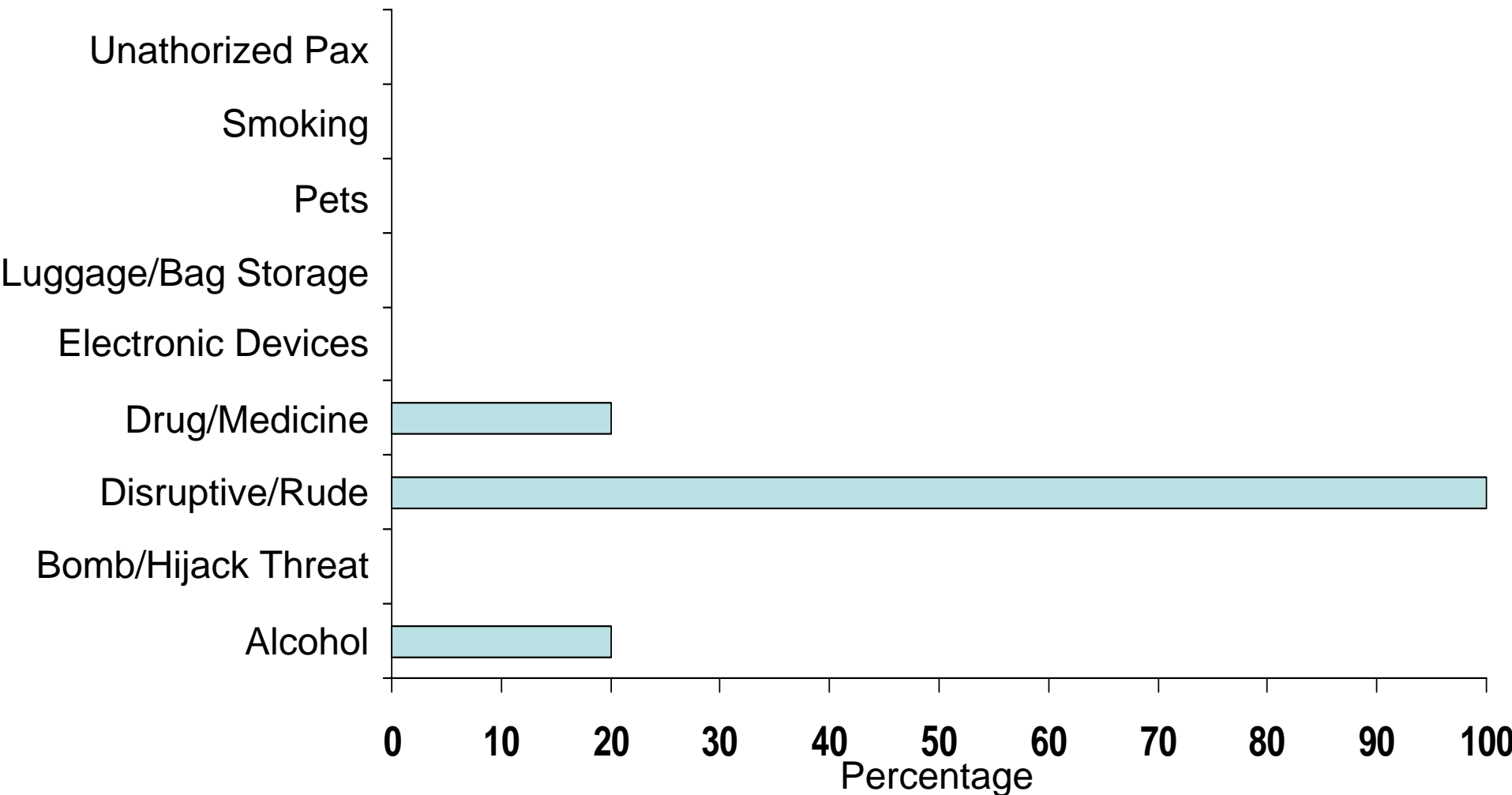
Results - Cabin Crew Fatigue Reports

- Time of Day



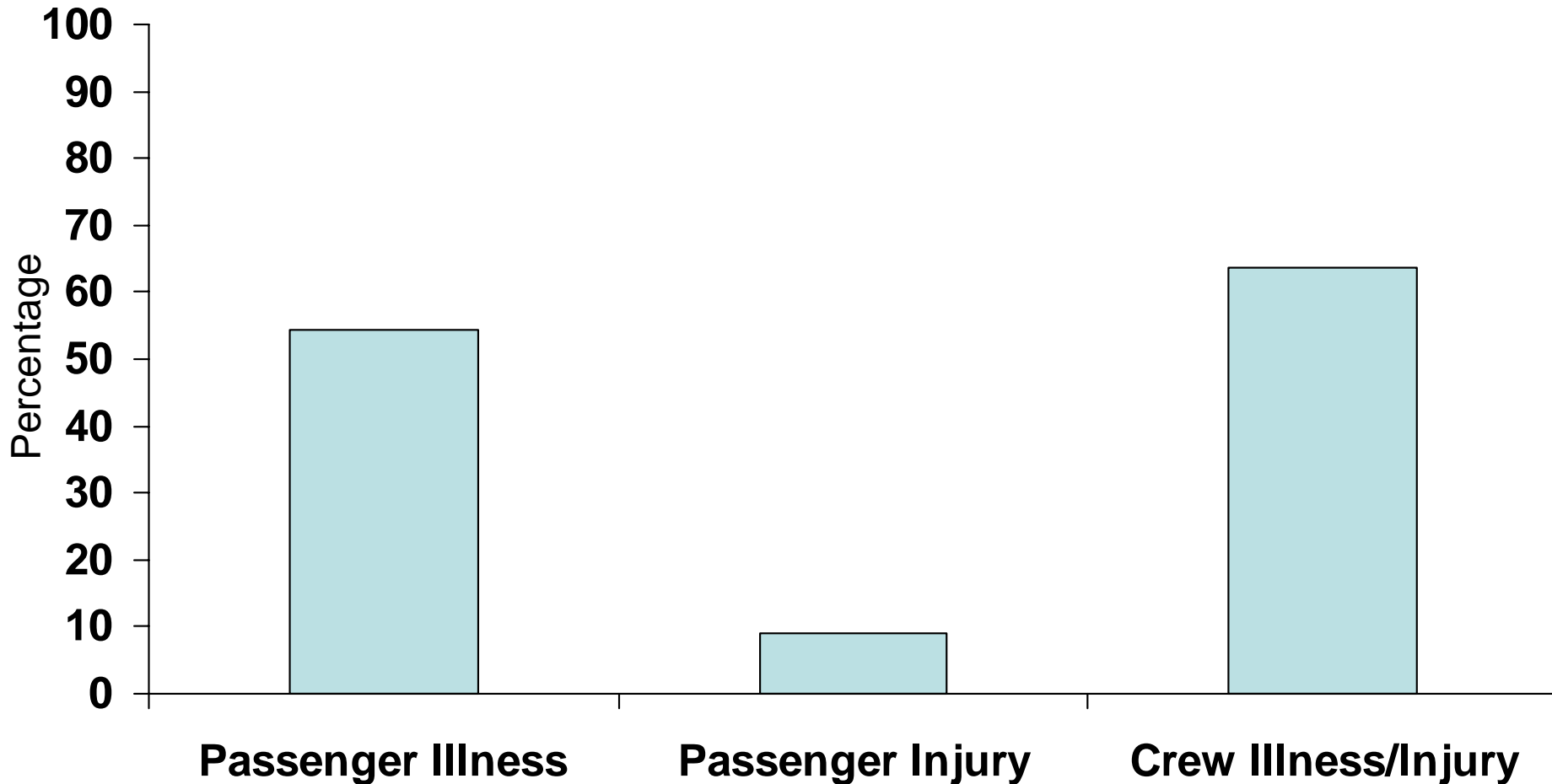
Results - Cabin Crew Fatigue Reports

- Passenger Misconduct



Results - Cabin Crew Fatigue Reports

- Injuries and Illnesses



Conclusions

- From 1990 to 2007, number of fatigue-related full-form reports per year averaged **2.4**
- Between 2004 and 2007, the number of reports averaged **10.5**
- Approximately 50% of the fatigue-related narratives involved concerns associated with scheduling and/or duty time issues – a finding that is largely consistent with the survey finding
- Voluntary safety reports can identify issues and problems of which the airline, industry, and government would otherwise be unaware

Conclusions

- **ASRS data are not completely representative of the issues that are faced by the flight attendant population**
- **Data analyzed, echo issues raised in the survey and provide support for recommending science-based scheduling and countermeasures training**
- **The review and analyses indicated that flight attendants report fatigue and other potentially contributing factors “somewhat” frequently**

Questions?

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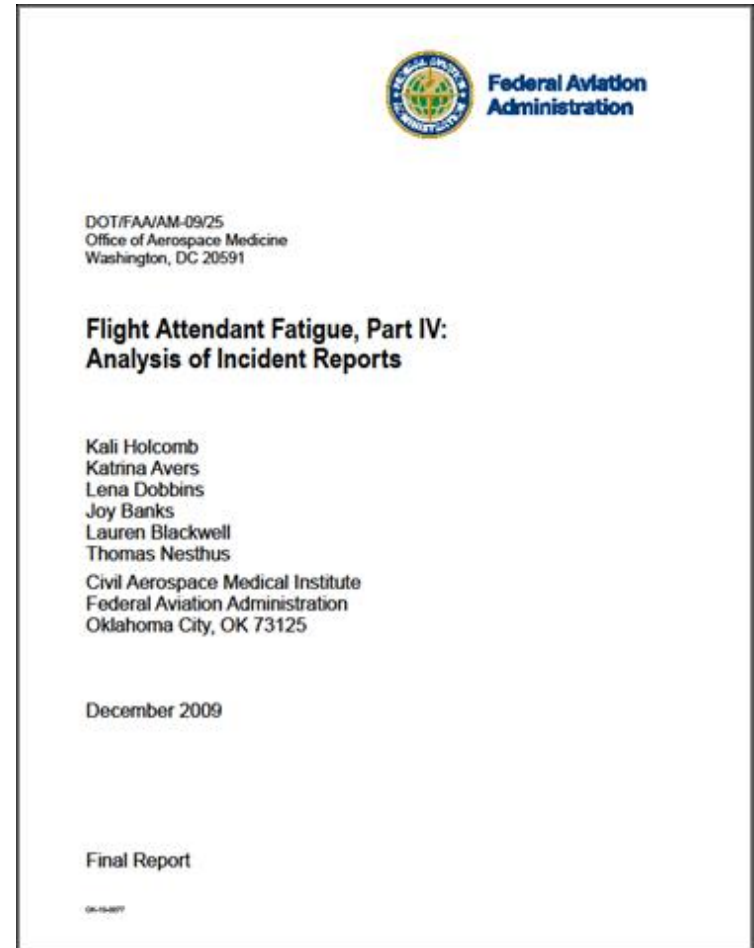
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http://www.faa.gov/library/reports/medical/oa_mtechreports/2000s/media/200925.pdf

International Flight Attendant Fatigue Regulations and Collective Bargaining Agreements

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Title 14 Code of Federal Regulations

- Sections 121.467 and 135.273 (Flight Attendant Fatigue)

<i>Scheduled Duty Period (Hours)</i>	<i>Normal Minimum Rest Period (Hours)</i>	<i>Reduced Rest Period (Hours)</i>	<i>Subsequent Rest Period (Hours)</i>	<i>Number of Flight Attendants Required</i>
14 or less	9	8	10	Min
14-16	12	10	14	Min + 1
16-18	12	10	14	Min + 2
*18-20	12	10	14	Min + 3

*Applies only to duty periods with 1 or more flights that land or take off outside the 48 contiguous states and the District of Columbia

Note: Generally, off-duty time begins no less than 15 minutes after the aircraft pulls into the gate and continues until 1 hr prior to a flight attendant's next departure.

Table summarized according to Title 14 CFR

Prescriptive Rules Advantages

- Easy to apply
- Work well for daytime operations
- Establishes a benchmark for economic competition between carriers



Prescriptive Rules Disadvantages

- Night operations
- Circadian rhythms
- Time zones
- Layovers
- Human factors



METHOD

- **Procured 38 Regulations & 13 Collective Bargaining Agreements (CBA)**



1. 117 International Civil Aviation Organization (ICAO) members websites

2. FAA International Field Offices

3. International Cabin Safety Symposium

4. ICAO Flight Safety Exchange Information

5. FAA Cabin Safety Aviation Safety Inspectors

Countries Represented



Figure 1. The 41 ICAO member states represented in the study

METHOD

- **Inclusion Criteria**

Regulations or CBAs with duty time and rest rules applicable to cabin crewmembers and/or all crewmembers

- **Content Analysis (n=35)**

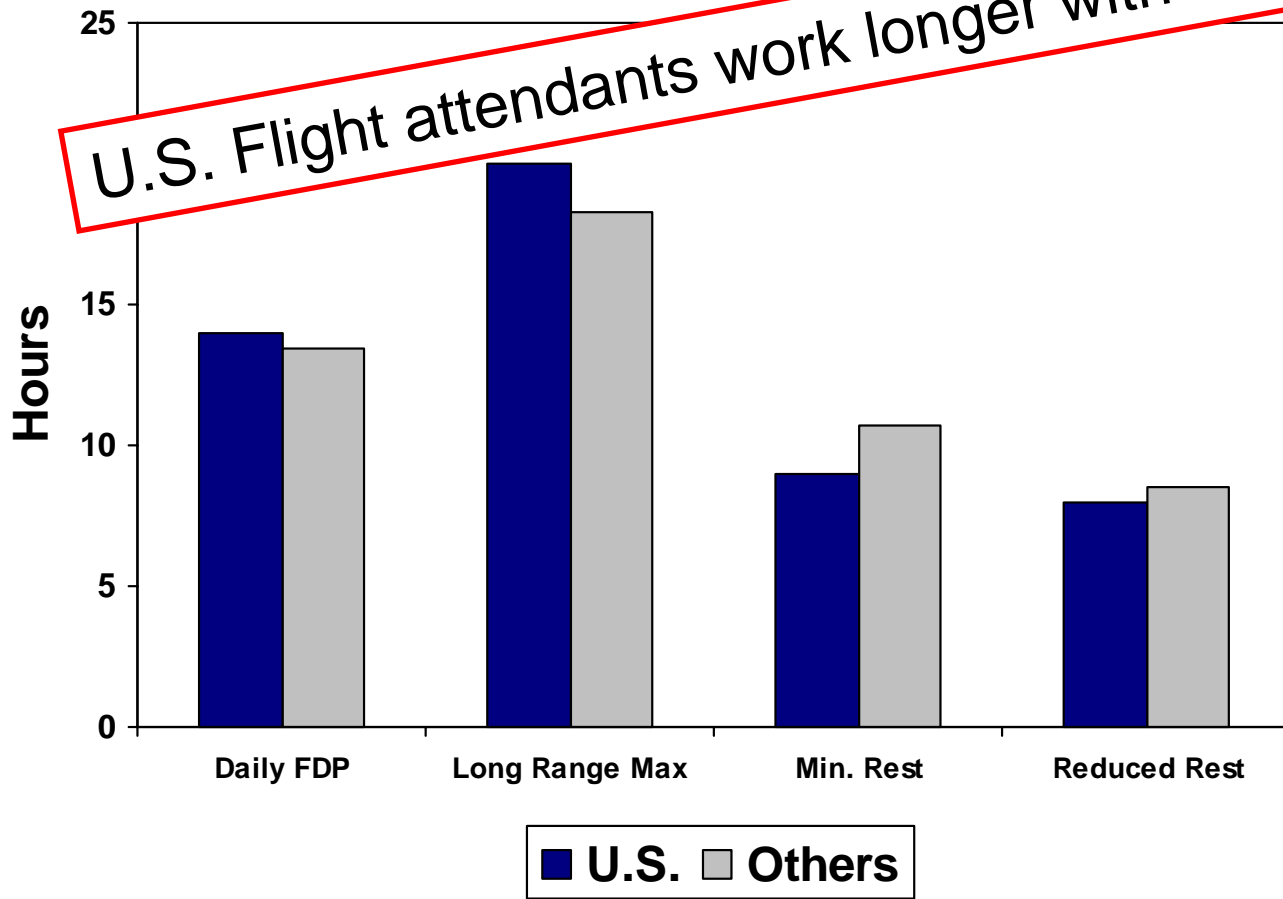
1. Working hour limits
2. Sleep and rest requirements
3. Circadian rhythms
4. Other

RESULTS - Rule Types

<i>Rules (n=35)</i>	<i>%</i>	<i>#</i>
Working Hour Limits	49	17
Sleep and Rest Requirements	37	13
Circadian Rhythm	6	2
Other	8	3
Total	100	35

RESULTS - U.S. Comparison

U.S. Flight attendants work longer with shorter rest periods



DISCUSSION

- **Common Practices**

- Majority use prescriptive rules
- Carriers may be scheduling flight attendants to the limit
- Prescriptive rules have limitations

- **Best Practices**

- Data driven
- Adaptive
- Incorporate science-based fatigue knowledge
- Recognize fatigue risks

RECOMMENDATIONS

- **Establish flight attendant fatigue workgroup**
 - Subject matter experts
 - Aviation stakeholders
 - Medical and research scientists
 - Aviation Safety Management Systems experts
- **Re-evaluate Title 14 CFR Sections 121.467 and 135.273**
- **Develop adaptive fatigue mitigation safety system combining scientific principles and knowledge with operational support**

Limitations

- **Regulations specifically addressing flight attendants duty and rest periods are minimal**
- **Information reported is time sensitive – rules change**
- **Possible misinterpretation of regulation/ CBA due to legalese**

Questions?

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