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Airline Pilots` Fatigue in Korea and the Manual for FM

SeungYoung Lee

Airline Pilot Association Korea

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About Fatigue Management Status in Korea

Current FM regulation:
ICAO ANNEX 6_4.10.2

Flight time, flight duty period, duty period and rest period limitations that are within the prescriptive fatigue management regulations established by the State of the Operator.

FRMS Task Force launched October 2015

- **Competent Authorities : MOLIT(CAA Korea)**
- **Relevant Parties: Operators, ALPA-K, Aviation related Research Centers and Associations, University**
- **ALPA specializes in research & academic issues, not industrial action**

Flight Time and Flight Duty Period Limitation in Korea

Flight Crew Formation	Max flight Time	Max flight duty time	Max flight time in 28 days	Max flight time in 365 days
1 captain	8	13	100	1,000
1 captain + 1 pilot	8	13	100	1,000
1 captain + 1 pilot + 1 flight engineer	12	15	120	1,000
1 captain + 2 pilots	12	16	120	1,000
2 captain + 1 pilot	13	17	120	1,000
2 captains + 2 pilots	16	20	120	1,000
2 captains + 2 pilots + 2 Flight engineer	16	20	120	1,000

Why Fatigue Management Research Korean Style?

Korean aviation industry and aviation culture have been influenced by U.S. and tried to implement a regulation similar to FAR 117 for fatigue management.

A practical review concluded that if Korea had the same regulation as FAR117 or EASA FTL, it would cause more fatigue, paradoxically in some aspects.

Not because Korean work rules are easier than US or EU rules, but because of different sleep/work practices.

Fatigue related Aviation Accidents in Korea

Asiana Flight 214 Accident, SFO, 6 July 2013
NTSB Aircraft Accident Report

Finding No 6

The flight crew was experiencing **fatigue**, which likely degraded their performance during the approach.

Finding No 8

Insufficient flight crew monitoring of airspeed indications during the approach likely resulted from expectancy, increased workload, **fatigue**, and automation reliance.

Probable cause No 5

Flight crew **fatigue** which likely degraded their performance.

Analysis of Korean Sleep Characteristics

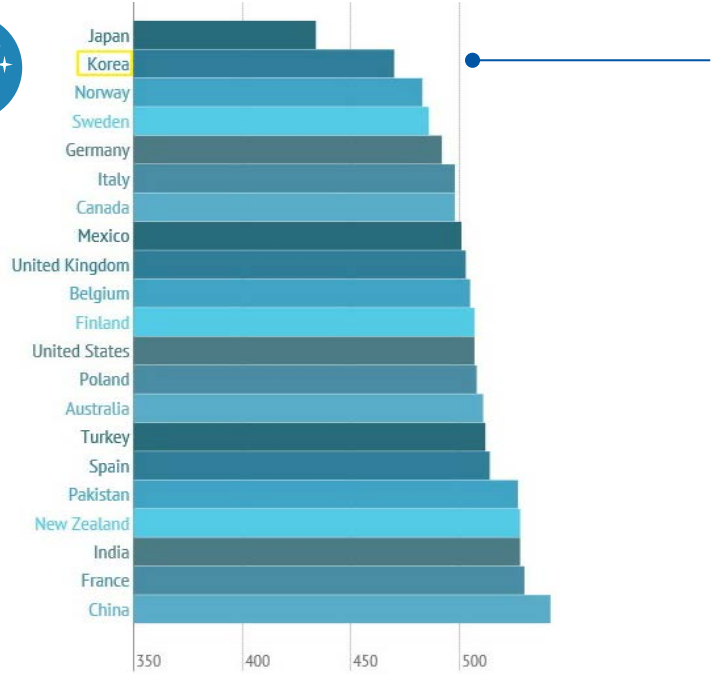
01 The rapid industrialization and economic growth in Korea over the past 50 years and hyper-competitive circumstances have contributed to sleep restriction being viewed as a virtue.

02 Many Koreans are encouraged to keep awake for longer hours in order to work more and/or study more.

03 Sometimes, long sleepers are regarded as idle people.

04 Sleep tends to be undervalued and sleep deprivation is prevalent across the country (Yoon, Yang et al. 2015).

Analysis of Korean Sleep Characteristics



:: Average Sleep time (min.) in OECD Countries

The Korean Adult sleep time (6h 15m) is the shortest in OECD Countries

- Stanford Sleep Research Center

56% of Korean employees said that their duty is interrupted by drowsiness

- Korean Academy of Sleep medicine

13% of adults have experienced a job related accident or near miss due to drowsiness

- Korean Academy of Sleep medicine

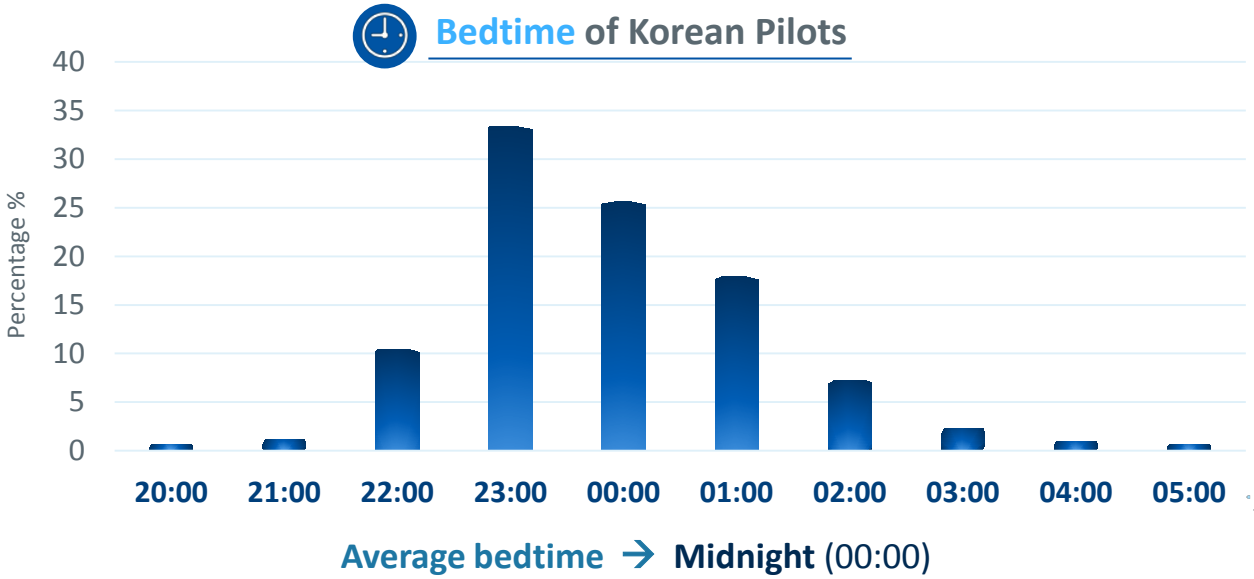
Fatigue Survey

	1st survey	2nd survey
Focus	What factors cause Korean pilot fatigue?	What is the status of Korean pilots` fatigue?
Period	May~June 2015	September~October 2015
How to analysis	Factor Analysis and Regression	Structural Equation Modeling
Number of Respondents	929	521
Survey Participant	All Airline pilots in Korea (Korean Air, Asiana Airlines, Jin Air, Air Busan, Jeju air, Eastar Jet, T`way Air) Approximate total number of pilots in Korea is 4000	
Survey method	Self-administered questionnaire (SurveyMonkey)	

ALPA-K developed Questionnaires

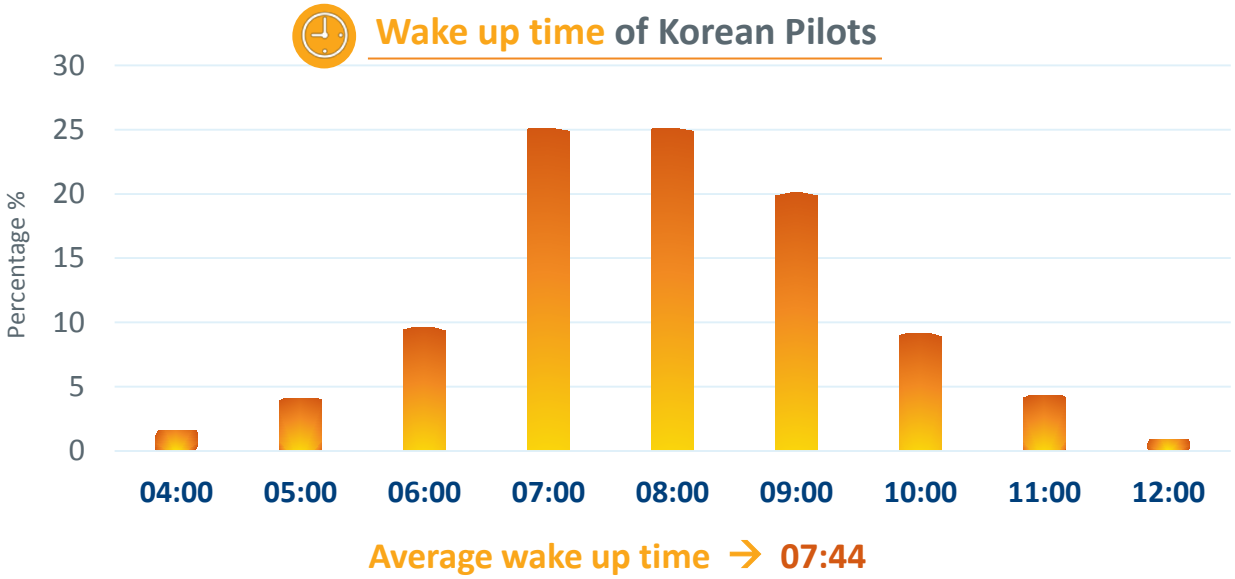
Analysis of Korean Pilots` Sleeping pattern

- **The 2nd survey Q59:**
  What is the average time you went to bed at home in previous month?



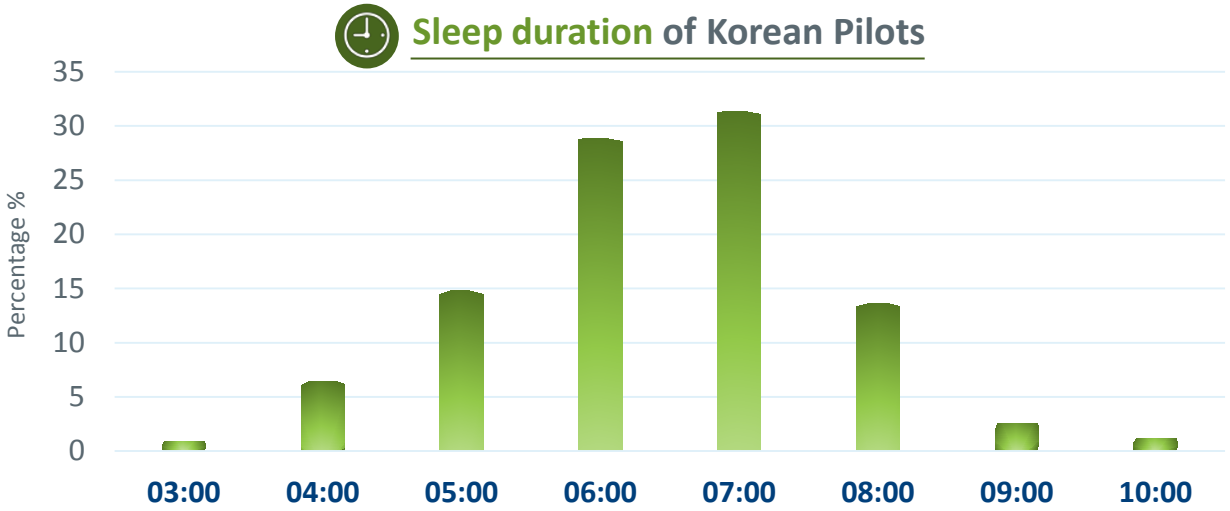
Analysis of Korean Pilots` Sleeping pattern

- **The 2nd survey Q61:**
  What is the average time you woke up at home in previous month?



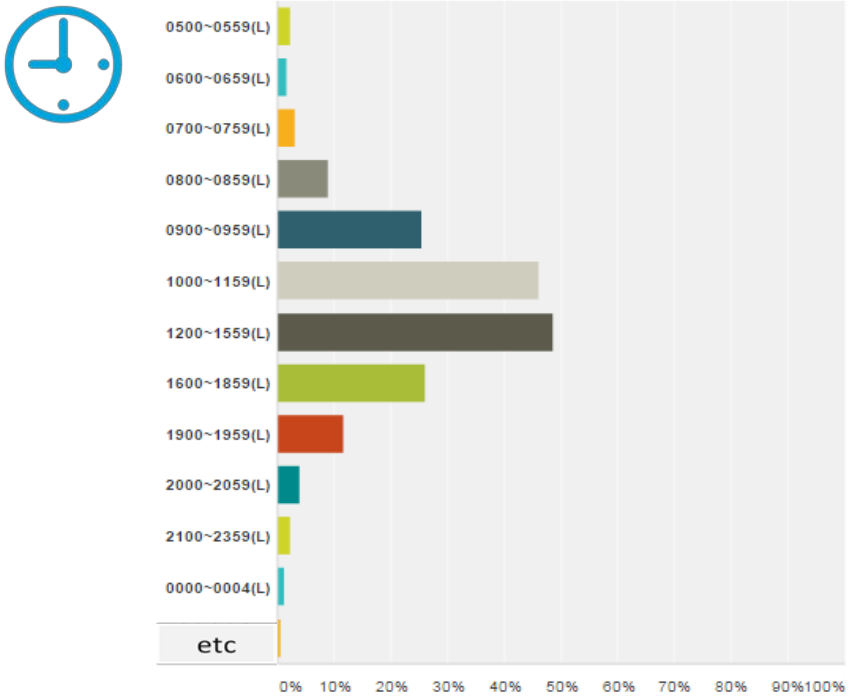
Analysis of Korean Pilots` Sleeping pattern

- **The 2nd survey Q62:**
  What is the average time you slept at home In previous month?



Average Sleep Duration : 06hr 25min (not time in bed)

Pilot Fatigue Survey Results

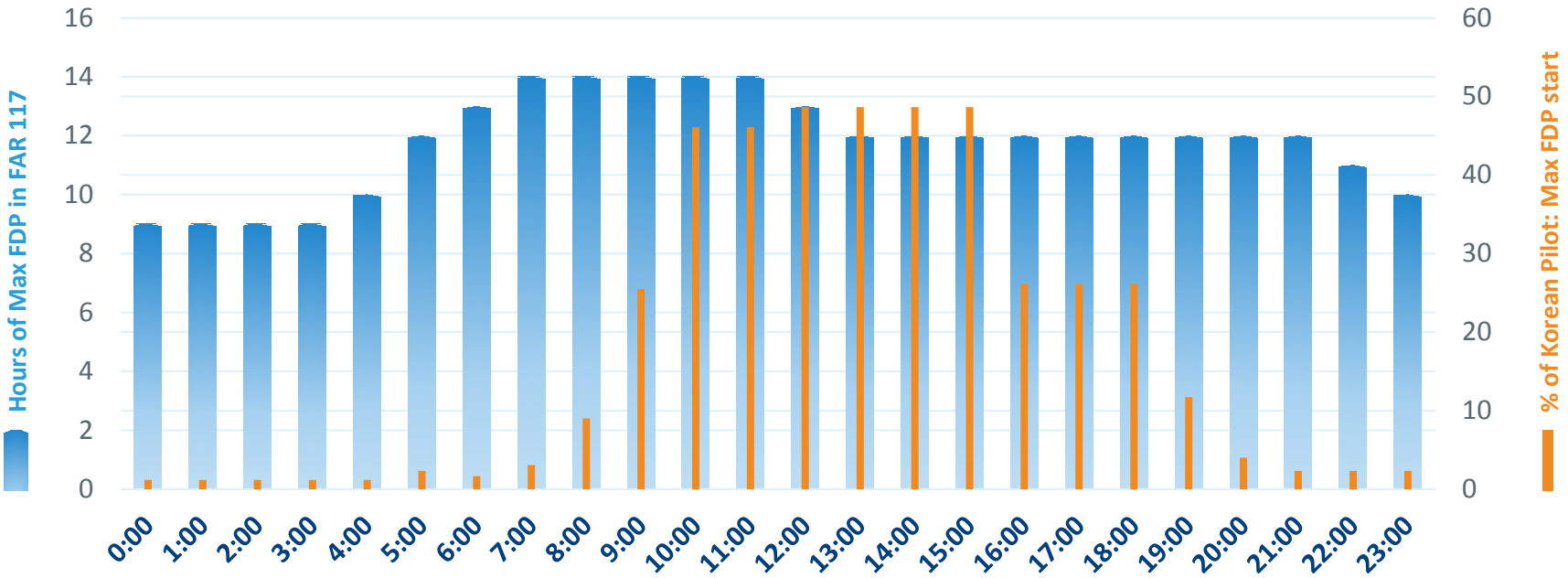


- **1st Survey Q58:**
  At which show up time can you operate the aircraft for the longest time?

from ALPA-Korea Fatigue survey

What happened to just copying other`s FM Norm?

Comparison between FAR 117 and Survey of Korean Pilots



Applying Cultural Difference in Fatigue Management

From "Fatigue risk management: Organizational factors at the regulatory and industry/company level. Philippa Gander"

- Cultural differences may mean that a system that works well in one setting may not be able to be replicated in a similar organization in a different country, or in an organization with a different ethnic mix of employees.
- An understanding of cultural influences is therefore an important consideration in designing an effective FRMS.
- This underscores the need for active employee involvement in the development and implementation of FRMS.

"Other Considerations" for FM

Reporting Culture of Country

Aviation Safety Reporting Status

- Mandatory Safety Reporting (ROK_Air Transport)
- Voluntary Safety Reporting (ROK_Air Transport)

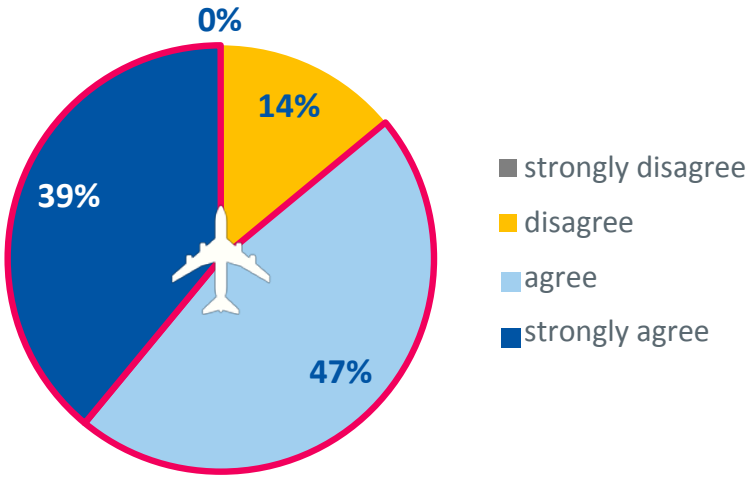
Total number of flight operations for the Korean national carriers:

811,534

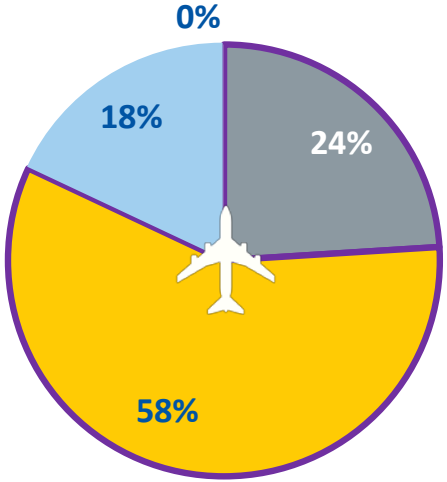
All data status are from 2014~2015

"Other Considerations" for FM (From ALPA Korea Survey)

Occupational Climate of Country/Company



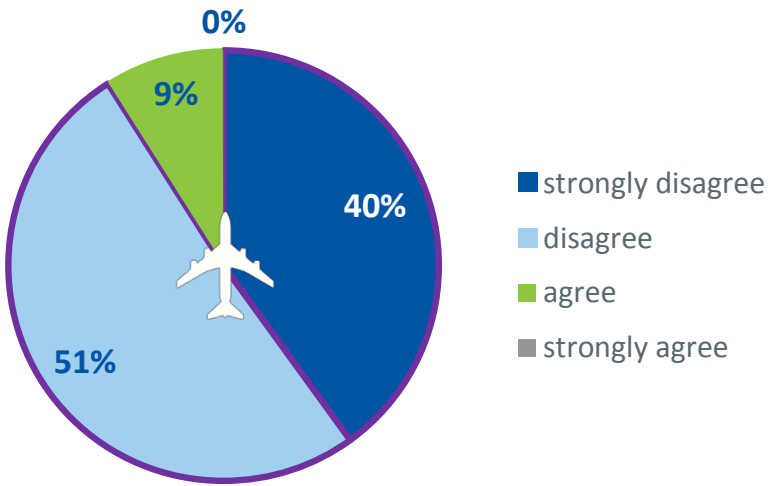
The company atmosphere is authoritative and hierarchical.



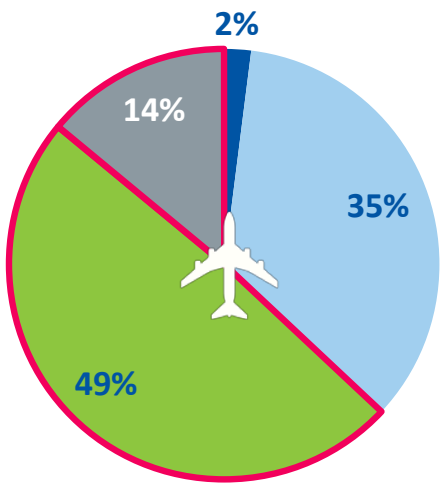
I have opportunities and channels to talk about my idea

"Other Considerations" for FM (From ALPA Korea Survey)

Company/Regulatory management



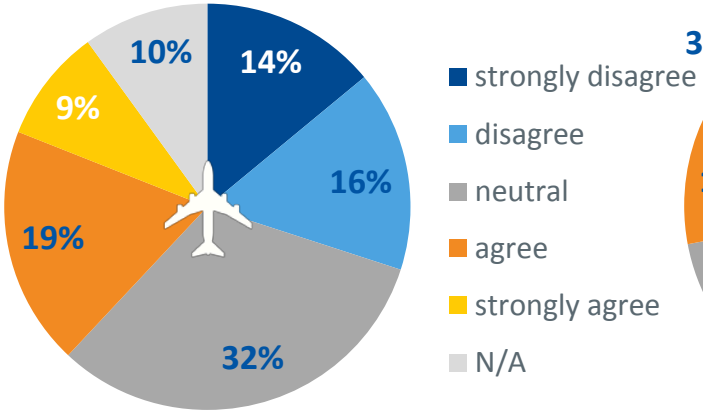
Department cooperate each other with conflicts.



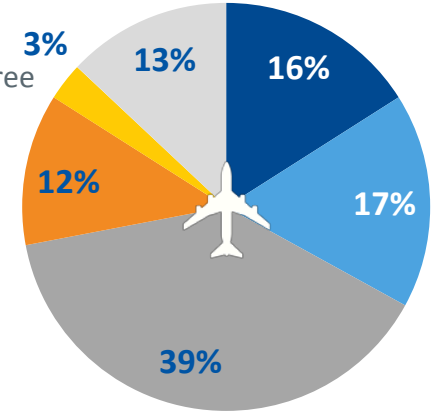
I am asked to do my work with irrational principle or inconsistency.

"Other Considerations" for FM (From ALPA Korea Survey)

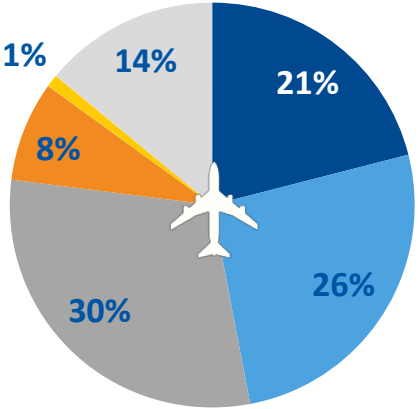
Ethnic Difference



My Flight operational performance is less than foreign crew when I start to fly early morning.



I pay less attention than foreign crew in on long-haul flight.



I sleep better than foreign crew in the aircraft rest facility.

Conclusion

01

An understanding of cultural influences is therefore an important consideration in designing an effective FRMS.

02

Those diversities should be studied in each country because only that country can know in detail.

03

The manual for the Oversight of Fatigue Management Approaches (Doc 9966) Guidance material was developed by three parties: Government, Operators and Pilot Associations.

04

More employee involvement is needed in the development and implementation of fatigue management in some region.

THANK YOU

SeungYoung Lee

Airline Pilot Association Korea

aviator7230@gmail.com